Vol. 1001 Number 4

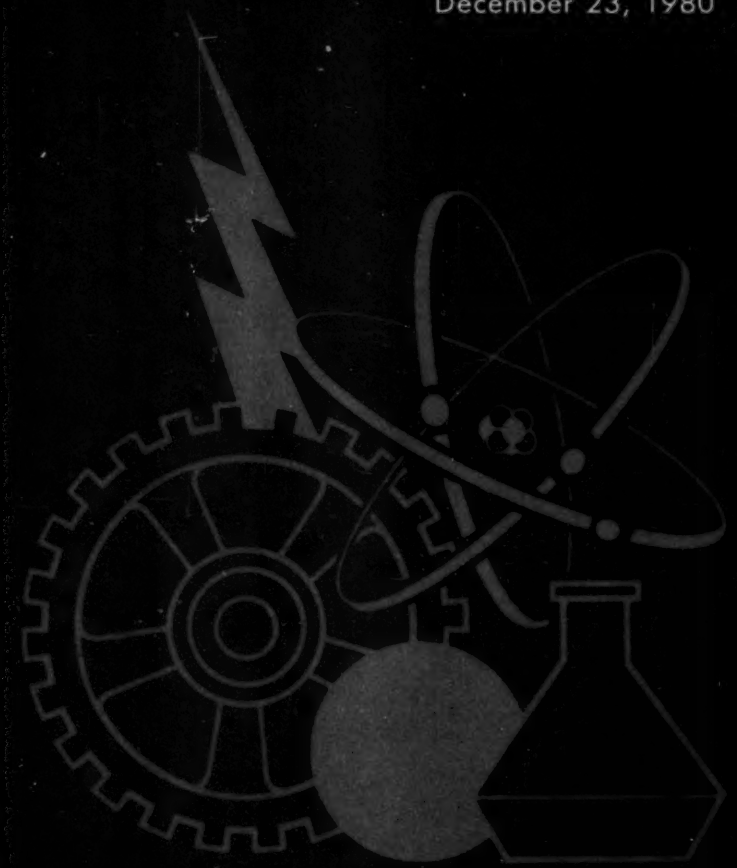
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

December 23, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

December 23, 1980 Volume 1001 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

October 1980 Classification Orders

The reclassifications covered by the classification changes below became effective October 1980. These changes will be printed monthly. Addenda information will continue to be printed quarterly.

Classification Order 755, effective October 2, 1980:

	Class	*Subclasses*
Abolished	260	551–567; 567.5; 567.6; 568–570; 570.5–570.9; 571–585.
Established	260	351.1–351.6; 453.1–453.9; 453.99; 543.1; 543.2.
	[1] 564	1–512.
Title change	280	453 RW.

Classification Order 756, effective October 3, 1980:

Abolished	210	1–84; Digests. 18; 22; 23; 25–32.
Established	210	600–806; Cross-reference art collections 900–928.

Classification Order 757, effective October 28, 1980:

Abolished	7	141.
	81	52.3; 52.35; 52.4–52.6; 71; 72.
	144	32; 281–283; 288.
	145	50–52.
	269	321.
Established	81	429–483; Cross-reference art collections, 900; 901.
	157	14–21.
	269	329; Cross-reference art collections, 900–910.
Title change	81	53 R.

Classification Order 758, effective October 31, 1980:

Abolished	340	177–192; 194–212.
Established	340	870.01–870.44.

Classification Order 759, effective October 31, 1980:

Abolished	260	648–660; 662–664.
Established	260	139.9.
	[2] 570	101–264.

ALFRED C. MARMOR,
Administrator for Documentation, November 26, 1980.

[1] Newly established Class 564 Definitions separately available.
[2] Newly established Class 570 Definitions separately available.

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND.
Commissioner of Patents and Trademarks.

Oct. 29, 1980.

No Change In Foreign Filing License Requirements

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703–557–2897, or Mr. Edward Drazdowsky at 703–557–2167.

WILLIAM FELDMAN,
Acting Assistant Commissioner, for Patents.

Date: Nov. 24, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,312,548, Re. S.N. 170,259, Filed Jul. 18, 1980, Cl. 430/57, XEROGRAPHIC PLATES, Virgil W. Straughan, Owner of Record: *Xerox Corporation, Rochester, N.Y.*, Attorney or Agent: H. M. Brownrout, et al., Ex. Gp.: 166

4,047,565, Re. S.N. 192,096, Filed Sep. 29, 1980, Cl. 166/217, WELL TOOL, Charles D. Crickmer, Owner of Record: *Otis Engineering Corporation, Dallas, Tex.*, Attorney or Agent: Joe E. Edwards, et al., Ex. Gp.: 354

4,110,899, Re. S.N. 182,775, Filed Aug. 29, 1980, Cl. 29/571, METHOD FOR MANUFACTURING COMPLIMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS, Kouichi Nagasawa, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 254

4,122,022, Re. S.N. 192,060, Filed Sep. 29, 1980, Cl. 252/28, METHOD FOR PREPARING CLAY-BASED GREASE COMPOSITIONS, Kenneth A. MacKenzie, et al., Owner of Record: *Shell International Research Maatschappij B.V., Hauge, Netherlands,* Attorney or Agent: B. R. Pravel, Ex. Gp.: 116

4,124,407, Re. S.N. 189,743, Filed Sep. 23, 1980, Cl. 134/3, METHOD FOR CLEANING ALUMINUM AT LOW TEMPERATURES, Robert Eric Binns, Owner of Record: *Amchem Products, Inc., Ambler, Pa.*, Attorney or Agent: Alexis Barron, et al., Ex. Gp.: 173

4,169,691, Re. S.N. 194,174, Filed Oct. 6, 1980, Cl. 409/10, MACHINE FOR TRACING THE PROFILE OF AN ORBITING STAR GEAR, Henry J. Flair, Owner of Record: *Illinois Tool Works Inc., Chicago, Ill.*, Attorney or Agent: Thomas W. Buckman, et al., Ex. Gp.: 324

PATENT NOTICES

Certificates of Correction for the Week of Dec. 23, 1980

3,555,374	4,192,954	4,213,270	4,222,912
3,856,675	4,194,113	4,213,462	4,222,926
4,032,321	4,195,141	4,214,053	4,223,024
4,032,502	4,195,840	4,215,177	4,223,102
4,035,355	4,198,418	4,215,259	4,223,110
4,045,343	4,203,063	4,215,551	4,223,537
4,050,973	4,205,062	4,216,159	4,223,546
4,101,358	4,205,233	4,216,726	4,223,596
4,102,746	4,206,262	4,216,815	4,223,734
4,115,977	4,206,782	4,217,107	4,223,824
4,131,764	4,206,946	4,217,358	4,224,171
4,132,425	4,207,887	4,217,414	4,225,158
4,178,441	4,208,314	4,218,159	4,225,385
4,180,522	4,208,504	4,219,164	4,225,946
4,180,571	4,208,712	4,220,536	4,226,338
4,182,901	4,209,912	4,221,058	4,226,400
4,183,520	4,211,453	4,221,223	4,226,609
4,186,608	4,211,825	4,221,343	4,226,724
4,187,222	4,212,109	4,221,417	4,226,963
4,187,224	4,213,084	4,221,705	4,226,969
4,189,484	4,213,129	4,222,038	

Disclaimers

4,032,974.—*Frederik Johannes Van Roessel,* Upper Saddle River, N.J. VIDEO PROCESSING CIRCUIT. Patent dated June 28, 1977. Disclaimer filed Sept. 8, 1980, by the assignee, *North America Philips Corporation.*

Hereby enters this disclaimer to claim 7 of said patent.

4,161,890.—*Alexander Goloff,* East Peoria, and *Ralph E. Denning,* Washington, Ill. FRICTION DRIVE CONTACT ZONE. Patent dated July 24, 1979. Disclaimer filed Nov. 7, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1, 2, 19 and 21–26 of said patent.

4,223,522.—*Yasushi Nomura,* Tokorozawa; *Fumio Nakajima,* Tokyo; *Kenji Yamada,* Koganei; and *Takayasu Machida,* Iruma, Japan. ELECTRONIC TIMEPIECE Patent dated Sept. 23, 1980. Disclaimer filed Oct. 24, 1980, by the assignee, *Citizen Watch Company Limited.*

The term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

4,229,211.—*Donald D. Battles,* Atlanta, Ga. LADLE HEATING SYSTEM. Patent dated Oct. 21, 1980. Disclaimer filed Oct. 2, 1980, by the assignee, *The Cadre Corporation.*

The term of this patent subsequent to Sept. 22, 1997, has been disclaimed.

Dedications

3,755,911.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Dayton, Ohio. LIQUID REMOVING APPARATUS AND METHOD. Patent dated Sept. 4, 1973. Dedication filed Oct. 17, 1980, by the inventors.

Hereby dedicates to the Public the entire term of said patent.

3,757,426.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Dayton, Ohio. LIQUID REMOVING METHOD. Patent dated Sept. 11, 1973. Dedication filed Oct. 17, 1980, by the inventors.

Hereby dedicates to the Public the entire term of said patent.

3,903,343.—*Frederick Pfaff,* Cornwells Heights, Pa. METHOD FOR REDUCING SINK MARKS IN MOLDED GLASS FIBER REINFORCED UNSATUATED POLYESTER COMPOSITIONS, AND MOLDED ARTICLES THEREBY PRODUCED. Patent dated Sept. 2, 1975. Dedication filed Sept. 24, 1980, by the assignee, *Rohm and Haas Company.*

Hereby dedicates the remaining term of said patent to the Public.

4,035,961.—*Raymond E. Pemrick,* Schenectady and *Paul M. Cocanour,* Greenwich, N.Y. COATED ABRASIVE BACKING OR DIMENSIONALLY STABILIZED HEAT STRETCHED FABRIC. Patent dated July 19, 1977. Dedication filed Oct. 20, 1980, by the assignee, *Norton Company.*

Hereby dedicates to the Public the entire term of said patent.

4,140,829.—*Raymond E. Pemrick,* Schenectady and *Paul M. Cocanour,* Greenwich, N.Y. WOVEN HEAT-STRETCHED BACKING MEMBERS OF IMPROVED DIMENSIONAL STABILITY. Patent dated Feb. 20, 1979. Dedication filed Oct. 20, 1980, by the assignee, *Norton Company.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5 :00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 15, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-2-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-13-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-27-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-4-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	1-4-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-27-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-1-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

REISSUES

DECEMBER 23, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

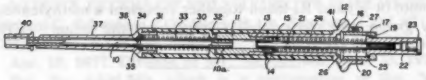
Re. 30,453
PIPETTES

Emil A. Scordato, Eastchester, and William C. Strobel, Bronx, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Original No. 3,853,012, dated Dec. 10, 1974, Ser. No. 186,023, Oct. 4, 1971. Application for reissue Mar. 19, 1979, Ser. No. 21,965

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—425.6 **13 Claims**



1. A manual pipette adapted to have a disposable tip wedge fitted at one end thereof and in co-axial relationship thereto, the arrangement being such that a disposable tip is secured to the pipette only by the frictional force of the wedge fit, said pipette comprising *a piston operating member that is actuated to draw a liquid into and discharge it from a disposable tip,* a detipping member for removing a disposable tip that is wedge fitted to the pipette, said member being slideably mounted on said pipette in a direction parallel to the axis of the pipette and movable between a normal position away from a disposable tip and a position where it engages the end of a disposable tip and thereafter pushes the tip in an axial direction to free it from frictional engagement with the pipette , *resilient means for biasing said detipping member to its normal position, and means adjacent the end of the pipette remote from the end to which a disposable tip is fitted and proximate to said piston operating member for effecting a relative movement between said detipping member and a disposable tip fitted to the pipette whereby one handed operation of the pipette is facilitated when going from a pipetting to a detipping operation.*

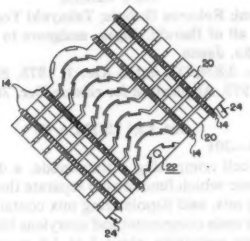
Re. 30,454
FLEXIBLE TRACK FOR ELECTRICALLY ENERGIZED MINIATURE VEHICLES

John D. Birdsall, 1262 Sunset Plaza Dr., Los Angeles, Calif. 90069

Original No. 4,095,743, dated Jun. 20, 1978, Ser. No. 745,529, Nov. 29, 1976. Continuation-in-part of Ser. No. 652,071, Jan. 26, 1976, abandoned. Application for reissue Mar. 12, 1979, Ser. No. 19,340

Int. Cl.³ A63H *18/12;* **E01B** *23/00*

U.S. Cl. 238—10 F **18 Claims**



7. A track for miniature cars, trains, or the like, comprising: an elongated structure formed of a plurality of rigid transverse members, each of said transverse members including intermediate coupling means for coupling such transverse members to the next adjacent transverse member, said elongated structure being capable of being turned laterally to curved configurations within predete mined limits; at least one elongated electric element extending along the length of said elongated structure, said electric element being formed of electrically conductive material and being capable of substantial longitudinal extension and contraction; each of said transverse members having integral longitudinally projecting members at each end thereof to be received in corresponding recesses in the ends of adjacent ones of said transverse members to serve as end couplings for the transverse members.

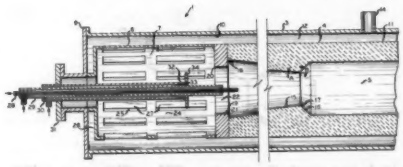
Re. 30,455
APPARATUS FOR MAKING CARBON BLACK

Eulas W. Henderson, Oregon, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,025,312, dated May 24, 1977, Ser. No. 652,694, Jan. 27, 1976. Application for reissue Apr. 25, 1978, Ser. No. 899,949

Int. Cl.³ B01J *10/00;* **C09C** *1/48*

U.S. Cl. 422—156 **15 Claims**



9. An apparatus for producing carbon black, said apparatus including:

a. an elongate housing;

b. a first member mounted in said housing and forming a converging/diverging venturi, said member having an upstream end;

c. first means forming a precombustion chamber in said housing adjacent to and upstream of said upstream end of said first member, said first means including a perforate member mounted in said housing and extending upstream from adjacent said upstream end of said first member, said perforate member having an upstream end wall closed to the flow of air therethrough into the precombustion chamber, a downstream opening, and a side wall with a plurality of through perforations, said side wall being spaced from an interior portion of said housing forming a space therebetween;

d. air inlet means comprising said space communicating with said precombustion chamber and only circumferentially introducing air generally tangentially into said precombustion chamber;

e. second means communicating with said precombustion chamber and operable to introduce a combustible fuel thereinto;

f. a first tubular member extending axially into said precombus-

tion chamber and operable for introducing feed oil into one of said precombustion chamber and said venturi; and

g. a second member positioned in said housing adjacent said upstream end of said first member, said second member having a through opening providing an upstream opening for the first member and thereby providing flow communication between said downstream opening of said precombustion chamber and said upstream end of said venturi whereby a burning mixture of fuel and air flows from the precombustion zone through the through opening into the venturi, said through opening being smaller than the upstream end of said venturi; and

h. means connecting the downstream end of the first means with the upstream end of the second member to prevent flow of fluid into the upstream end of the venturi except through the through opening of the second member.

Re. 30,456
2-SUBSTITUTED PHENYL-S-TRIAZOLO[5,1-a] ISOQUINOLINE COMPOUNDS

Amedeo Omodei-Sale, Voghera; Pietro Consonni, and Leonard Lerner, both of Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

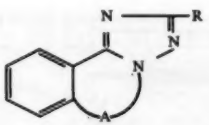
Original No. 4,075,341, dated Feb. 21, 1978, Ser. No. 636,330, Nov. 28, 1975. Continuation-in-part of Ser. No. 473,045, May 24, 1974, abandoned. Application for reissue Apr. 23, 1979, Ser. No. 32,205

Claims priority, application United Kingdom, May 25, 1973, 25163/73; Aug. 22, 1973, 39789/73

Int. Cl.[3] **C01D** *471/04;* **A61K** *31/53*

U.S. Cl. 424—258 **14 Claims**

1. A compound of the formula

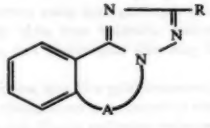


wherein A represents the group —CH_2—CH_2— or —CH=CH—; and

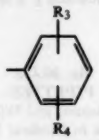
wherein R is substituted phenyl of the formula

wherein one of the substituents R_3 and R_4 is located in the 3- or 4-position of the phenyl ring, and represents a lower alkoxy, lower alkenyloxy, lower alkynyloxy, fluoro, chloro, bromo, trifluoromethyl, hydroxy, cyclopropyloxy, cyclobutyloxy, cyclopentyloxy, benzyloxy, nitro or dimethylamino group and the other represents hydrogen, methoxy, fluoro, chloro or bromo; or R_3 and R_4 taken together represent a methylenedioxy group.

13. A method for preventing littering in an impregnated female animal which comprises administering to said animal an effective amount of a compound of the following formula



wherein R is substituted phenyl of the formula



wherein one of the substituents R_3 and R_4 is located in the 3- or 4-position of the phenyl ring, and represents a lower alkoxy, lower alkenyloxy, lower alkynyloxy, fluoro, chloro, bromo, trifluoromethyl, hydroxy, cyclopropyloxy, cyclobutyloxy, cyclopentyloxy, benzyloxy, nitro or dimethylamino group and the other represents hydrogen, methoxy, fluoro, chloro or bromo; or R_3 and R_4 taken together represent a methylenedioxy group; and the symbol A represents the group —CH_2—CH_2— or —CH=CH—.

Re. 30,457
PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Robert J. Ife, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

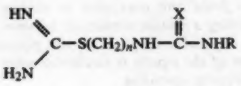
Original No. 4,084,001, dated Apr. 11, 1978, Ser. No. 744,584, Nov. 23, 1976. Application for reissue Aug. 10, 1978, Ser. No. 933,254

Claims priority, application United Kingdom, Dec. 1, 1975, 49248/75

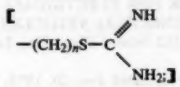
Int. Cl.[2] **A61K** *31/17*

U.S. Cl. 424—322 **9 Claims**

1. A compound of the formula



wherein n is an integer from 3 to 6; R is lower alkyl [or]



X is sulphur; or a pharmaceutically acceptable acid addition salt thereof.

Re. 30,458
DRY CELLS

Yoshio Uetani; Rokurou Ikebata; Takayuki Togo, and Tugiyasu Iwamaru, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Original No. 3,874,932, dated Apr. 1, 1975, Ser. No. 370,433, Jun. 15, 1973. Application for reissue Dec. 30, 1977, Ser. No. 865,907

Int. Cl.[3] **H01M** *6/06*

U.S. Cl. 429—201 **14 Claims**

1. A dry cell comprising a zinc anode, a depolarizing mix and a separator which functions to separate the anode from the depolarizing mix, said depolarizing mix containing manganese dioxide as its main component and acetylene black immersed in an electrolyte *containing about 2 to 3.4 percent by weight of ammonium chloride and* having zinc chloride as its main ingredient, said depolarizing mix containing water and chlorine in an amount of about 50 to 90 parts by weight and about 5.5 to 14.5 parts by weight, respectively, per 100 parts by weight of manganese dioxide, the chlorine being present in the form of

said zinc chloride or zinc chloride with added hydrochloric acid.

Re. 30,459

NITRITE ESTERS OF POLYHYDROXY POLYMERS

Richard G. Schweiger, 1324 Rimrock Dr., San Jose, Calif. 95120

Original No. 4,138,535, dated Feb. 6, 1979, Ser. No. 788,411, Apr. 18, 1977. Division of Ser. No. 669,483, Mar. 23, 1976, Pat. No. 4,035,569, which is a continuation of Ser. No. 487,196, Jul. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 298,580, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 40,442, May 25, 1970, Pat. No. 3,702,843. Application for reissue Apr. 26, 1979, Ser. No. 33,455

Int. Cl.³ C08B *5/00, 31/06, 37/00;* C08F *8/30*

U.S. Cl. 525—61 **21 Claims**

21. A nitrite ester of a polysaccharide having a degree of substitution of about 0.1 to 2.0.

Re. 30,460

COUPLING OF ALKALI METAL-TERMINATED POLYMERS

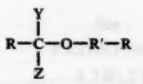
George A. Moczygemba, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,049,753, dated Sep. 20, 1977, Ser. No. 678,096, Apr. 19, 1976. Application for reissue Aug. 21, 1978, Ser. No. 935,202

Int. Cl. C08f *8/00, 8/02, 8/06*

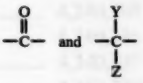
U.S. Cl. 525—334 **1 Claim**

7. A polymer having the structure



(I)

wherein the radical R is n-butyl, R' is a divalent radical selected from the group consisting of



wherein Y is selected from the group of radicals consisting of —OH and —Z wherein Z is a homopolymer of butadiene and wherein 230 polymer chains Z are present in 100 molecules of formula (I).

and zinc chloride or zinc chloride with added hydrochloric acid.

PATENTS

GRANTED DEC. 23, 1980

ERRATA

For CLASS	See PATENT NO.
434–011	4,240,212
434–194	4,240,213
368–028	4,240,249
474–144	4,240,303
254–369	4,240,309
493–196	4,240,336
493–137	4,240,337
440–040	4,240,370
355–003 DD	4,240,723
252–325	4,240,908
336–094	4,240,917
564–044	4,240,979
564–153	4,240,980
564–259	4,240,981
564–285	4,240,982
568–316	4,240,983
568–435	4,240,984
568–483	4,240,985
570–206	4,240,987
209–003.1	4,241,102
426–138	4,241,106
250–574	4,241,282
290–054	4,241,283
219–061.2	4,241,284
219–130.32	4,241,285
219–147	4,241,286
219–161	4,241,287
219–441	4,241,288
219–450	4,241,289
219–518	4,241,290
219–536	4,241,291
219–541	4,241,292
235–092 PK	4,241,293

PATENTS

GRANTED DECEMBER 23, 1980

GENERAL AND MECHANICAL

4,240,157

SELF-SERVICE GASOLINE GLOVE

Russell E. Peters, Valparaiso, Ind., assignor to James D. Coburn, Portage, Ind.

Filed Dec. 19, 1977, Ser. No. 861,960
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—161 R **7 Claims**

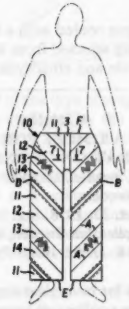
1. An interchangeable right or left hand glove for self-service gasoline dispensing, comprising a body of gasoline resistant canvas material having one face on one side, another face on the other side and side edges joining said faces, each face having a palm section, four fingers and a thumb, all of which are joined together by the side edges to form said glove body, said thumb extending laterally from one side of the palm sections, a layer of neoprene on each face of said body with the neoprene extending to and completely surrounding an opening into one end of the glove body to hold the end of said glove in open position, and fastening means secured to one side of the glove in close proximity to said open end and serving to attach the glove to a fixed object, such as the license plate on a vehicle, for inserting and removing the right or left hand without the assistance of the other hand.

4,240,158

PANTS-TYPE GARMENT AND METHOD OF MAKING THE SAME

Harry R. de Polo, 480 Park Ave., New York, N.Y. 10022

Continuation-in-part of Ser. No. 921,181, Jul. 3, 1978. This application Jul. 3, 1979, Ser. No. 54,478
Int. Cl.[2] A41D *1/06, 17/02*
U.S. Cl. 2—227 **14 Claims**



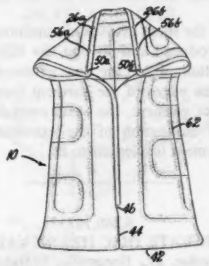
1. A pants-type garment comprising two bands of material each of which is wound helically to form a leg portion of said garment, means joining adjacent edges of adjacent convolutions of said bands, upper end portions of said material being shaped to form a body portion of said garment with a contoured edge shaped for the formation of a crotch, a crotch band having opposite side edges, means joining one of said side edges of said crotch band with said contoured edge of one leg portion, and means joining the opposite side edge of said crotch band with said contoured edge of the other leg portion to unite said two leg portions and form a body portion of said garment.

4,240,159

FILLED BODY ROBE

John C. Wrightson, Darien, Conn., assignor to Heritage Quilts, Inc., New York, N.Y.

Division of Ser. No. 828,270, Aug. 29, 1977. This application Feb. 26, 1979, Ser. No. 14,812
Int. Cl.[2] A41D *1/00*
U.S. Cl. 2—243 R **1 Claim**



1. A method of donning a quilted garment adapted to envelop a wearer thereof from below the feet to above the shoulders while allowing relatively free movement of the hands of the wearer comprising:

(a) enveloping the lower torso, legs and feet of the wearer in a sack-like structure formed by having outlying longitudinal quarter portions of a substantially rectangular quilted sheet of fabric folded towards each other and the outlying and bottom edges of which are joined together after folding to a point at about the waist of the wearer;

(b) wrapping the upper portion of the garment about the upper torso and arms of the wearer by passing the top corner of each respective said outlying longitudinal quarter portion over the corresponding shoulder and arm of the wearer to a position in close proximity to the said point at about the waist of the wearer;

(c) joining first fastening means positioned at the said top corner of each said quarter portion to corresponding and cooperating second fastening means on the outer edge of each said quarter portion positioned in close proximity to the said point at about the waist of the wearer whereby arm holes are formed for the wearer through which the hands of the wearer are free to protrude.

4,240,160

CUT AND SEWN SURGICAL STOCKINGS

Walter H. Imboden, Burlington, N.C., and David M. Lieberman, New York, N.Y., assignors to Burlington Industries Inc., Greensboro, N.C., by said Walter H. Imboden and Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 26, 1978, Ser. No. 972,717
Int. Cl.[2] A41B *11/00*
U.S. Cl. 2—239 **17 Claims**

1. A method of manufacturing support garments for elongated extremities comprising the steps of:

(a) providing a sheet of warp-knit power fabric, the fabric

having a lengthwise dimension of greatest stretch and power and a filling dimension in which the stretch is incidental so that desired stretch graduations can be maintained at predetermined longitudinal intervals during use;

(b) cutting out of the sheet a support garment form, the sheet being oriented during cutting so that the lengthwise dimension of the sheet extends circumferentially in the final garment produced and so that the filling dimension extends longitudinally in the final garment produced; and

(c) seaming the edges of the garment form to produce the final support garment, the seam extending along the dimension of elongation of the extremity on which the support garment is adapted to fit.

4,240,161

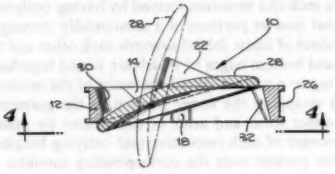
ARCUATE DISC HEART VALVE

Miles C. Huffstutler, Jr., Burnsville; Marshall S. Kriesel, St. Paul, and Lawrence Anderson, Fridley, all of Minn., assignors to Medical, Incorporated, Inver Grove Heights, Minn.

Continuation-in-part of Ser. No. 821,400, Aug. 3, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,375

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **6 Claims**



1. A heart valve comprising:

a base having a flow passage therein, said flow passage having an upstream side and a downstream side;

a free floating flow actuated disc having a generally convex downstream side and a generally concave upstream side, means for confining said disc in said passage for rotation about its own axis of revolution and for pivotal movement about a plurality of instantaneous chrodal axes from a closed position through an opening phase to an open position and from said open position through a closing phase to said closed position, the initial instantaneous pivot axis having said opening phase being offset laterally from said axis of revolution, said disc having a circular geometric base, said offset being equal to from about 0.05 to 0.20 the length of a diameter of said circular geometric base, the height of said generally concave upstream side being equal to from about 0.05 to 0.10 the length of said diameter, and said initial instantaneous pivot axis extending for a part of its length on the upstream side of said generally concave upstream side.

4,240,162

ENDOPROSTHETIC PATELLAR DEVICE

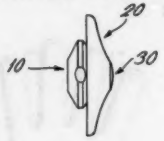
Michael B. Devas, Bexhill-on-Sea, England, assignor to National Research Development Corporation, London, England

Filed Dec. 4, 1978, Ser. No. 967,795

Claims priority, application United Kingdom, Dec. 7, 1977, 50937/77

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1.91 **8 Claims**



1. An endoprosthetic patellar device of multi-part construction comprising:

a first part adapted for securement in the posterior region of the patella,

a second part separably connected with said first part and having an exposed surface shaped to simulate the patellar articular surface, and

a third part interconnecting said first and second parts, said first and second parts being formed with axially aligned bores, and said third part being engaged by a snap-fit in said bores.

4,240,163

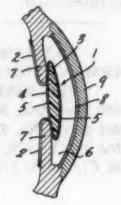
MEDICAMENT COATED INTRAOCULAR LENS

Miles A. Galin, 115 E. 38th St., New York, N.Y. 10016

Filed Jan. 31, 1979, Ser. No. 7,890

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **12 Claims**



1. An intraocular lens coated with a compatible medicament, said medicament being selected from the group consisting of a sulfated polysaccharide and ethacrylic acid.

4,240,164

DEVICE IN A TOILET FOR BIOLOGICAL DEGRADATION OF EXCREMENT

John H. Lind, Solna, Sweden, assignor to Polypur Forsaljnings AB, Sundbyberg, Sweden

Filed Oct. 23, 1978, Ser. No. 953,369

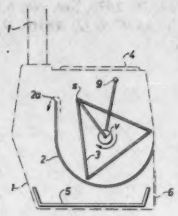
Claims priority, application Sweden, Oct. 28, 1977, 77/12193

Int. Cl.³ A47K *11/02*; B01F *7/02*; C05F *3/04*

U.S. Cl. 4—449 **6 Claims**

1. Device in toilets for biological degradation of excrement, the device comprising a collecting vessel for excrement and for material suitable for the degradation thereof and a container for receiving a mixture of excrement and material discharged from the collecting vessel, said collecting vessel having a solid bottom portion and an upper edge above said bottom portion, said mixture being moved from the interior of said vessel over said upper edge to the exterior of said vessel when discharged from said vessel, said container having an opening located

outwardly of and below said vessel upper edge to receive said discharged mixture, the mixing being performed by a cultivator rotationally supported in the collecting vessel, said cultivator comprising a wire construction running continuously between and rotationally supported by two opposed side walls of the collecting vessel and having an axis of rotation generally



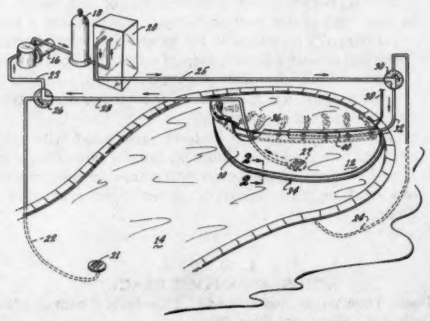
lengthwise of said vessel upper edge for mixing material and excrement and discharging the mixture to the container via said upper edge of the collecting vessel, said cultivator having portions spaced axially therealong and extending radially outwardly from said axis, said portions being disposed in planes substantially perpendicular to a plane disposed perpendicular to said axis of rotation.

4,240,165

SPA INSTALLATION

George Kyrias, 31112 Via Santo Tomas, San Juan Capistrano, Calif. 92675

Filed Jan. 22, 1979, Ser. No. 4,997
Int. Cl.³ E04H *3/18, 3/20;* A47K *3/14*
U.S. Cl. 4—493 **7 Claims**



1. In a swimming pool of the type having walls and a bottom, and in which the space enclosed by the walls and bottom is normally filled with water, having a pool suction line for withdrawing water from the pool, having a pool return line for adding water to the pool, and having a pump, a filter, and a water heater connected in a series combination between the pool suction line and the pool return line so that water withdrawn from the pool may be heated and filtered before being returned to the pool, the improvement comprising in combination:

a removable partition extending across the space enclosed by the walls and bottom of the pool to partition the pool into a spa and a remaining pool space, the pool suction line and the pool return line communicating with the remaining pool space;

said partition adapted to be readily removed from the pool to permit the entire pool to be used for swimming;

a spa suction line communicating with the spa for removing water from the spa;

a spa return line communicating with the spa for adding water to the spa;

means mounting the spa return line on and along the length of said partition; and,

valve means for selectively connecting the series combination of the pump, the filter, and the water heater between said spa suction line and said spa return line so that water withdrawn from the spa may be heated, filtered, and returned to the spa;

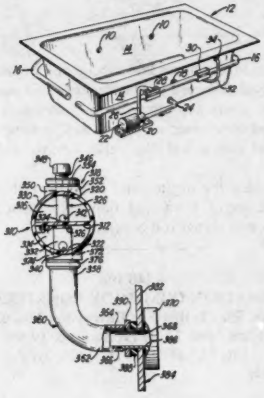
said partition serving, when installed, to prevent intermixing of the normally warmer water in the spa with the normally cooler water in the remaining pool space to conserve heat energy.

4,240,166

WHIRLPOOL SYSTEM

Murray Altman, Fort Lee, and Gerald J. Bellasalma, West Caldwell, both of N.J., assignors to Thermasol, Ltd., Leonia, N.J.

Filed Jan. 22, 1979, Ser. No. 5,377
Int. Cl.³ A47C *19/12*
U.S. Cl. 4—542 **30 Claims**



1. In a whirlpool system including a water receptacle, a plurality of outlets spaced around the interior of the water receptacle, a water supply channel connected to a source of water, an air supply channel connected to a source of air, and connecting means for receiving water and air from the water and air supply channels, respectively, for mixing the received water and air, and for delivering the mixed water and air to each of the outlets, the improvement wherein the water supply channel is one channel of a continuous single piece of multiple channel tubing and the air supply channel is another channel of said multiple channel tubing.

4,240,167

FLUSH VALVE CONTROL APPARATUS

Elbert G. Gilliland, 1801 Francis Rd., Knoxville, Tenn. 37919

Filed Sep. 1, 1978, Ser. No. 938,936
Int. Cl.³ E03D *1/14, 1/34*
U.S. Cl. 4—324 **6 Claims**

1. An apparatus for selectively terminating the flow of water from a conventional flush toilet which utilizes a tank, a flap valve over an outlet pipe and a trip lever, the improvement comprising:

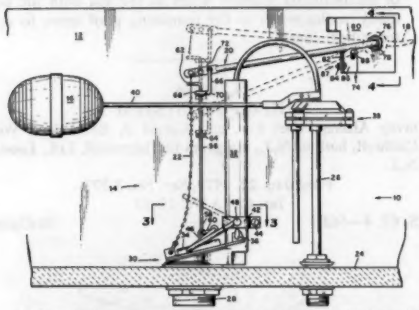
a support located inside and securely attached to said tank;

a foot for engaging the flap valve hingedly attached to said support whereby said foot may rotate downward and engage the flap valve;

a substantially vertical thrust rod having first and second

ends, said thrust rod having a first stop at said first end and second stop below said first end, said thrust rod being attached to said foot at said second end whereby downward vertical movement of said thrust rod causes said foot to rotate downward;

a thrust rod link with a first end attached to the trip lever and a second end slidably attached to said thrust rod between said first and second stops whereby a downward rotation



of the trip lever causes said second end of said link to slide vertically downward until it engages said second stop and whereby continued downward movement carries said thrust rod downward such that said foot engages said flap valve and closes said flap valve against said outlet pipe; and

resilient means for urging said foot upward whereby said foot disengages from said flap valve when downward force on said thrust rod is removed.

4,240,168

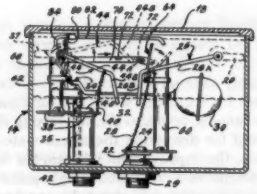
COMBINATION COMMODE CONSTRUCTION

James I. Duke, Rte. 2, Box 5A, Curryville, Mo. 63339

Filed Mar. 12, 1979, Ser. No. 19,466

Int. Cl.³ E03D *1/14, 1/36, 5/02*

U.S. Cl. 4—326 **19 Claims**



1. A water closet construction adapted to service a plurality of flush type toilet units comprising a water tank common to the plurality of toilet units for supplying flush water for each, a plurality of separate toilet unit control means on the water tank, each of which toilet unit control means is associated with a respective toilet unit and is actuatable for effecting separate and independent flushing thereof, and flushing means responsive to actuation of each of said toilet unit control means to flush the toilet unit associated therewith and to control the amount of flush water used in the flushing thereof, said flushing means including water refill means for providing refill water to said tank and said toilet units, said flushing means further including refill control means for separately and independently directing water from said water refill means to the respective toilet unit with which the actuated toilet unit control means is associated, said refill control means being further responsive to actuations of the toilet unit control means to inhibit supply of refill water to toilet units not associated with the actuated toilet unit control means.

4,240,169

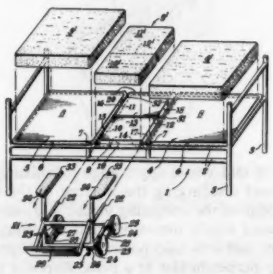
PATIENT TRANSFERRING APPARATUS

Kjell E. H. Roos, Tuvängsvägen 15, 752 45 Upsala, Sweden

Filed Jan. 26, 1979, Ser. No. 6,891

Int. Cl.³ A47C *3/32;* **A61G** *7/10*

U.S. Cl. 5—60 **8 Claims**



1. An apparatus for facilitating the transfer of a person from a bed to a wheelchair comprising the combination of

a bed having

an integral frame extending the entire length of said bed and having head, foot and center sections,

a mattress having head and foot portions supported by said head and foot sections of said frame, respectively, and a center portion, and

carrying means for supporting said center portion removably supported on said center section of said frame;

at least said center portion being bendable along a line substantially parallel with the longitudinal centerline of the bed so that a section thereof on one side of the line can be pivoted upwardly into the position of a chair-like back support for the person while the other section thereof serves as a seat; and

wheeled carriage means operatively associated with said carrying means and said center portion for supporting and laterally extracting said center portion and carrying means as a unit from the remainder of the bed to serve as a wheelchair.

4,240,170

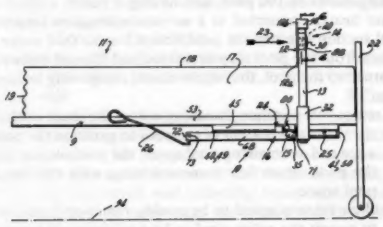
ADJUSTABLE FOOT BRACE

Ollibelle Thumberger, and Harold C. Thumberger, both of 1031 Belle Ave., Hamilton, Ohio 45015

Filed Oct. 12, 1978, Ser. No. 950,566

Int. Cl.² A47C *21/00*

U.S. Cl. 5—508 **19 Claims**



1. An adjustable foot brace adapted for use with a bed, said foot brace comprising

a foot panel to be located generally adjacent the footboard end of said bed,

connector structure means connecting said foot panel to said bed's frame, said connector structure means being operable to enable said foot panel to be moved between a storage position beneath the top surface of the bed's mattress and parallel to the bed's side and a use position generally transverse to the bed's side and above the surface of the bed's mattress,

said connector structure means comprising a post on which said foot panel is mounted, said post being generally vertically movable for locating said foot panel in the storage and use positions, and

latch means cooperable with said post for holding said post in the desired position.

4,240,171

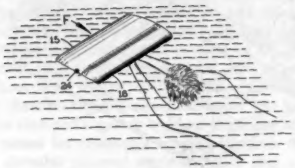
SWIMMER'S AID

William N. Parsons, 6455 Custer St., Hollywood, Fla. 33313

Filed Jul. 26, 1979, Ser. No. 60,851

Int. Cl.³ A63B *31/02*

U.S. Cl. 9—307 **9 Claims**



1. A swimmer's aid comprising;

hand grip means for engagement simultaneously by both of the swimmer's hands;

and flotation means attached to said hand grip means and extending laterally outward on each side beyond said hand grip means to provide flotation stability;

said flotation means comprising a unitary float member having an upwardly convex top surface and a downwardly convex bottom surface, said float member also having a downwardly-facing recess in its bottom midway across its lateral extent, said float member presenting downwardly-projecting flotation segments on opposite laterally outer sides of said recess;

and said hand grip means comprises a bar within said recess anchored at its opposite ends in said downwardly-projecting segments of the float member, said bar extending laterally across said recess spaced far enough from the bottom surface of the float member within said recess to permit the swimmer's fingers to extend over the bar.

4,240,172

SHOE UPPER CONFORMING MACHINE

Derek H. Garner, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Sep. 14, 1979, Ser. No. 75,743

Claims priority, application United Kingdom, Sep. 20, 1978, 37407/78

Int. Cl.³ A43D *23/00*

U.S. Cl. 12—14.5 **10 Claims**

1. A shoe manufacturing machine comprising:

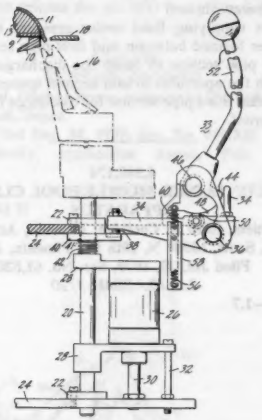
a last support with a last, a shoe upper, and an insole supported thereon;

a plurality of grippers arranged about the last support for gripping marginal portions of said shoe upper;

means for effecting relative heightwise movement between the last support and the grippers to cause said upper to be tensioned over said last;

an operator-controlled tensioning device associated with each gripper for varying at the discretion of the operator the tension in said shoe upper applied in the locality of said gripper, wherein said tensioning device comprises a lever operatively connected with said gripper associated with the device;

actuating means for effecting heightwise movement of said lever and said gripper relative to said last support, to vary the tension in said shoe upper, wherein said actuating means comprises a wedging member movable in a direction transversely of the heightwise movement of said lever



and having an inclined abutment surface, said member co-operating with a further abutment surface provided on the lever, the inclination of the wedging member and the co-efficient of friction between said member and said further abutment surface being such that the application of an upward force to the wedging member as a result of the tension in said shoe upper is insufficient to dislodge said wedging member in a direction transversely of the heightwise movement of said lever.

4,240,173

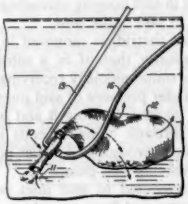
POOL VACUUM

John C. Sherrill, 547 W. Southern Hills Rd., Phoenix, Ariz. 85023

Filed Jul. 13, 1979, Ser. No. 57,211

Int. Cl.³ E04H *3/20*

U.S. Cl. 15—1.7 **9 Claims**



1. A pool vacuum including in combination:

a first intake hollow pipe section with a debris pick-up end and a discharge end wherein at least a portion of the discharge end thereof is cylindrical in cross section of a predetermined external diameter;

fluid discharge means comprising a second pipe section surrounding said discharge end of said first pipe section and spaced therefrom by first and second spacing means located substantially near the respective ends of said second pipe section to form a hollow chamber between the external surface of the discharge end of said first pipe

section and the internal surface of the second pipe section, the second spacer located near the discharge end of said first pipe section having a plurality of apertures therethrough extending substantially parallel to the axis of said first pipe section;

a third pipe section having an inlet end and an outlet end with said inlet end having an internal diameter greater than the external diameter of said first pipe section and communicating with the apertures through said second spacer, said third pipe section being bonded to one of said spacer and said second pipe section to provide a fluid-tight bond therewith; and

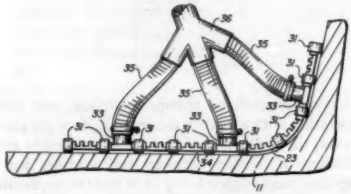
means for supplying fluid under pressure to the hollow chamber formed between said first pipe section and said second pipe section to cause the discharge of such fluid through the apertures in said second spacer into the inlet end of said third pipe section for discharge from the outlet end thereof.

4,240,174

SELF-CONTAINED MOBILE POOL CLEANING APPARATUS

James F. Thiem, 3610 E. Coolidge, Phoenix, Ariz. 85018, and Jeffrey L. Scott, 13008 N. 28th Pl., Phoenix, Ariz. 85032

Filed Jul. 30, 1979, Ser. No. 61,820
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **1 Claim**



1. A mobile self-contained vacuum cleaning apparatus for pools comprising:

a hand truck,

a housing mounted on said truck,

said housing defining inlet and outlet ports,

a filter basket mounted in said housing for receiving water from said inlet port,

a pump for drawing water through said inlet port and said basket into said housing,

a first reservoir arranged in said housing to extend longitudinally thereof for receiving water from said pump,

a second reservoir in said housing extending laterally thereof and connected to said outlet port,

a plurality of filter cartridges mounted in said housing to extend longitudinally thereof in a substantially parallel arrangement for simultaneously receiving water from said first reservoir under pressure of said pump along substantially their full lengths, filtering it and passing the water out therefrom through common ends into said second reservoir and then through said outlet port,

motor means for driving said pump,

a flexible hose connected to said inlet port for drawing water into its outer end from a pool,

a sweeper head,

said sweeper head comprising an elongated resilient body having a plurality of pairs of rotatably mounted wheels for moving the sweeper head over the pool surface,

flexible means for connecting said other end of said hose to said sweeper head,

said flexible means comprising at least a pair of passageways spacedly connected to said sweeper head for drawing water through said sweeper head and into said hose from at least a pair of spaced points along said sweeper head,

whereby said passageways deflect when the resilient body of said sweeper head deflects during movement to maintain a fluid-tight connection between said sweeper head and said connector, and

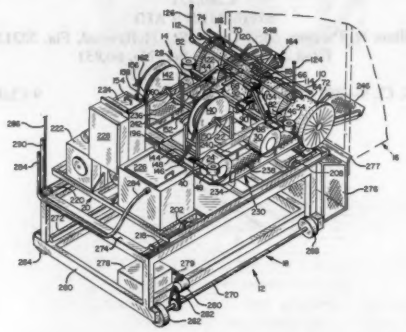
a wand hingedly connectable to said sweeper head for moving it along the bottom and walls of a pool.

4,240,175

APPARATUS FOR WASHING THE INTERIOR OF A FREIGHT CONTAINER

William A. Rogers, Portland, Oreg., assignor to Roberts Harvester, Inc., Portland, Oreg.

Filed Oct. 27, 1978, Ser. No. 955,464
Int. Cl.³ B08B *3/02, 9/00*
U.S. Cl. 15—21 E **6 Claims**



1. In an apparatus for washing the interior of an elongate, generally rectangular freight container having a bottom, a pair of sides, an open end, and a closed end,

a wash dolly having a chassis, a plurality of first support wheels, means for rotatably mounting the first support wheels to the chassis, first drive means for rotating at least one of the first support wheels, brush means for scrubbing at least the bottom of the container, second drive means for moving the brush means, spray means for discharging water adjacent the brush means, and guide means for engaging the sides of the container and maintaining the chassis and the first support wheels in proper orientation for longitudinal travel along substantially the entire length of the container;

a supply wagon having a first frame, a plurality of second support wheels, means for rotatably mounting the second support wheels to the first frame, ramp means adapted to receive and support the wash dolly and guide the wash dolly between the supply wagon and the interior of the container, means for supplying water under pressure to the spray means, and means for supplying power to the first and second drive means;

a mobile platform having a second frame, a plurality of third support wheels, means for rotatably mounting the third support wheels to the second frame, third drive means for rotating at least one of the third support wheels, means adapted to receive and support the supply wagon and guide the supply wagon to and away from the open end of the container, means mounted on the second frame for supplying power to the third drive means; and

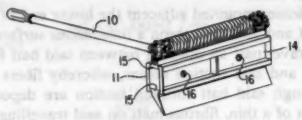
control means for causing the wash dolly to travel off of the supply wagon, into the open end of the container, along substantially the entire length of the container, and then back onto the supply wagon, and for further causing the brush means to move and the spray means to discharge water.

4,240,176

WINDSHIELD CLEANING TOOL HOLDER

Michael J. Farmer, Sioux Falls, S. Dak., assignor to Hydra Sponge Co., Inc., St. Louis, Mo.

Filed Mar. 19, 1979, Ser. No. 21,893
Int. Cl.[3] A47L 13/14, 23/04
U.S. Cl. 15—121 5 Claims



1. A device for interchangeably holding a plurality of windshield cleaning tools, comprising:

(a) a handle in the form of a long rod;

(b) a stationary channel member attached at its midpoint to the handle;

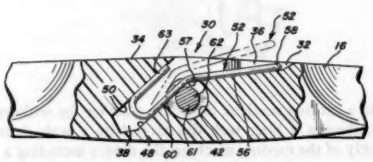
(c) a movable matching channel member adapted to be clamped to the stationary channel member in spaced parallel relationship, both channel members having facing ridges along their upper and lower edges, the ridges slanting downwardly and to either side, and one of the channel members having a rectangularly shaped spacer portion extending into the channel portion of the other channel member, the slanting ridges and the upper and lower surfaces of the spacer portion defining substantially triangular channels running along the upper and lower surfaces of the clamped together channel members; and (d) clamping means for releasably holding together the stationary and movable channel members, such that various windshield cleaning tools having spines adapted to engage the triangular channels can be inserted into such channels and clamped between the channel members.

4,240,177

CONNECTOR FOR WINDSHIELD WIPER BLADE

William H. Harbison, and Michael G. Mohnach, both of Valparaiso, Ind., assignors to The Anderson Company of Indiana, Gary, Ind.

Filed Apr. 23, 1979, Ser. No. 32,563
Int. Cl.[3] B60S 1/40
U.S. Cl. 15—250.32 4 Claims



1. A windshield wiper blade assembly (10) releasably mountable on the side of a wiper arm having a laterally extending pin (61) with a reduced diameter portion (62) between an enlarged outer end portion (64) and an enlarged inner end portion (66), said blade (14) having:

a pressure-distributing yoke member (16) molded of plastic and having parallel side walls (44,46) with an aperture (42) therethrough for receiving said laterally extending pin (61),

a cavity (32) molded in the top of said yoke member (16) and having spaced apart channels (38,40) intersecting along a chord with said aperture (42) in said yoke,

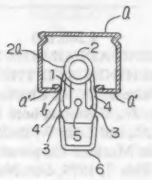
a U-shaped spring member (52) having parallel spaced apart legs (54,56) with the free ends of said legs secured in said channels (38,40) of said cavity (32), intermediate portions (55,57) of said legs (54, 56) extending in a chordal fashion across the aperture (42) in said yoke and tangentially bearing on the reduced diameter portion (62) of the pin (61), and said spring (52) having a connecting crosspiece (58) at the opposite end of the legs (54,56), said crosspiece (58) being seated in said cavity (32) so as to be recessed below the level of the yoke surface adjacent said cavity (32) when said spring (52) is bearing on said reduced diameter portion (62) of the pin (61) and further being adapted to be raised for moving the intermediate portions (55,57) of the spring (52) out of alignment with the aperture (42) to release the pin (61) for removal of the blade.

4,240,178

CURTAIN RUNNER

Kiyotsune Miki, Osaka, Japan, assignor to SM Industrial Company, Limited, Japan

Filed Dec. 14, 1978, Ser. No. 969,336
Claims priority, application Japan, Feb. 24, 1978, 53/23627[U]
Int. Cl.[2] A47H 15/00
U.S. Cl. 16—93 D 4 Claims



1. A curtain runner for use with a tubular curtain rod having a pair of guide rails opposed to each other at its bottom and a groove defined by the guide rails, the runner being T-shaped in a front view and including a head having runner portions on its opposite sides and a leg extending downward from the head, the runner being travellable along the groove with the runner portions supported on the guide rails of the curtain rod and with the leg inserted in the groove against rotation, said leg comprising synthetic resin and having a pair of vertically elongated apertures extending therethrough in parallel to the axis of the runner portion and communicating with each other at their upper ends through a slit to impart springlike elasticity to the front and rear outer walls of the leg, the runner being shiftable from its proper mounted position to a non-mounted position or from the non-mounted position to the proper mounted position by turning the leg in the groove through about 90 degrees while pressing and deforming the outer walls inward against the springlike elasticity thereof, the runner head having a width in the direction of travel of the runner approximately equal to or smaller than the width of the groove so that the runner in the non-mounted position is insertable into or withdrawable from the groove, the leg having a width in the direction of travel of the runner to render the leg insertable into or withdrawable from the groove with or without inwardly pressing the outer walls against the elasticity thereof.

4,240,179

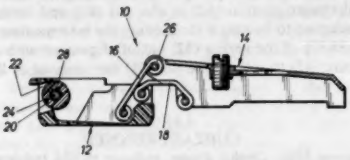
HINGE FOR CABINET DOORS

Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,414
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753904
Int. Cl.[3] E05D 11/10
U.S. Cl. 16—139 5 Claims

1. A hinge for cabinet doors, said hinge being movable from a closed position to an open position and vice versa, and com-

prising: two hinge mounting parts, a linkage mechanism joining said parts, one hinge mounting part being in the form of a cup having a wall with a recess and adapted to be recessed into a mortise in the cabinet door, a resilient snap-catch element mounted stationary in the wall of said cup in part within said recess, the other hinge mounting part having an extremity



extending into said cup in said closed position and having a catch projection in the area of said extremity which during the closing movement of the hinge is engaged by the snap-catch element and behind which it is arrested in the closed position, said snap-catch element being a roller made of resiliently compressible material.

4,240,180

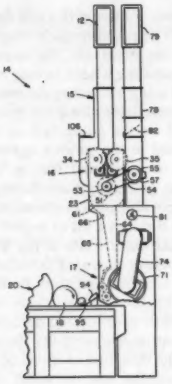
FIBER FEEDING APPARATUS FOR CARDING MACHINES AND THE LIKE

Dennis E. Wood, Fairport, N.Y.; Charles R. Auten, Charlotte; Paul L. Dellinger, Jr., Gastonia, both of N.C.; Gary M. Holland, Fort Mill, S.C., and Eddy W. Bullington, Gastonia, N.C., assignors to Rando Machine Corporation, Macedon, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,172

Int. Cl.³ D01G *15/40, 23/08*

U.S. Cl. 19—105 **16 Claims**



1. In a pneumatic fiber feeding system, apparatus for feeding fibers from a main fiber supply duct to a carding machine or the like, comprising

a vertical branch duct having a surge section in its upper end connected to said main duct to receive air-borne fibers therefrom,

a pair of feed rolls rotatably mounted in said branch duct adjacent the lower end of said surge section normally to cause a column of fibers from the supply duct to accumulate in said surge section,

a rotatable kicker roll mounted beneath said feed rolls in an opener section of said branch duct, and in registry with the nip formed between said feed rolls,

means for simultaneously driving said feed and kicker rolls, whereby fibers are fed by the feed rolls downwardly from said surge section into the path of the rotating kicker roll, which opens the fibers and directs them downwardly through a batt forming section in the lower end of said branch duct,

suction means connected to the bottom of said branch duct to maintain a pressure drop as between the air pressure in said surge and said batt forming sections, respectively, of said duct, whereby air tends to flow downwardly in said duct and through the column of fibers accumulated in said surge section,

a condenser mounted adjacent the lower end of said branch duct and having thereon a foraminous surface positioned to travel past an opening between said batt forming section and said suction means, whereby fibers which pass through said batt forming section are deposited in the form of a thin, fibrous matt on said travelling surface for delivery thereby to a carding machine or the like, and

control means on said branch duct between said surge and said batt forming sections thereof and operable selectively to adjust the rate of flow of air downwardly through said column of accumulated fibers, thereby to control the degree of compaction of the fibers in said surge section, and the rate at which said fibers are fed to said condenser.

4,240,181

WEB GUIDING DEVICE

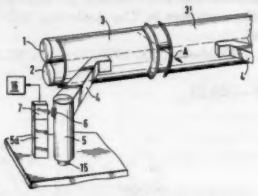
Paul G. Teichmann, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,441

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732017

Int. Cl.³ D01G *31/00;* **B65H** *25/02*

U.S. Cl. 19—0.25 **11 Claims**



1. In a carding machine including a device for withdrawing and gathering a fiber web discharged by a web delivering assembly of the carding machine; the device including a guide element arranged immediately downstream of the web delivering assembly and having a web guiding face for gathering into a running sliver the web discharged by said web delivering assembly, said guiding face extending, in a normal operative position, transversely to the direction of web feed of the web delivering assembly; the improvement wherein said device comprises

(a) support means for positioning said guiding face to be movable towards and away from said web delivering assembly;

(b) switch means operatively connected with said guiding face for actuating said switch means upon movement of said guiding face away from said web delivering assembly in response to a web pressure exceeding a predetermined force; and

(c) means connected to said switch means and responsive to the actuation of said switch means.

4,240,182

ARRANGEMENT FOR OPENING TEXTILE FIBER BALES

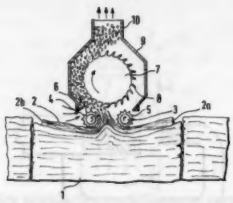
Ferdinand Leifeld, Kempen, and Jürgen Marx, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,270

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819292

Int. Cl.³ D01G 7/06

U.S. Cl. 19—81 21 Claims



4. An apparatus for opening textile fiber bales, particularly hard-pressed cotton bales, comprising: means for removing fiber material from above; means for transporting fiber material by layers in the plane of the layer; means for delivering fiber material to an opening element for breaking up into fiber flakes; at least one conveying roller as pressure roller for moving a layer; and an opening roller cooperating with said conveying roller.

4,240,183

FASTENER

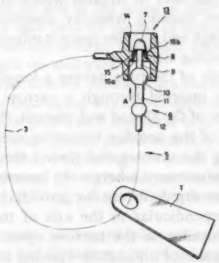
Yasukichi Sumimoto, Tokyo, and Masami Kato, Nagoya, both of Japan, assignors to Toska Co., Ltd. and Japan Bano'k Co., Ltd., both of Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 817

Claims priority, application Japan, Feb. 17, 1978, 53/19403[U]; Mar. 17, 1978, 53/29846; Jul. 31, 1978, 53/105352[U]

Int. Cl.³ B65D 63/00

U.S. Cl. 24—16 PB 26 Claims



1. A fastener comprising a socket having an aperture, a filament continuously extended from said socket, and an inserting part provided at the leading end of said filament and capable of being inserted into said aperture in either direction thereof and being anchored in the aperture, wherein a rigid inner flange including a guide face having the same axis as the axis of the aperture and two circular abutting faces perpendicular to said axis, said flange being formed in said aperture, said aperture thereby being symmertical about a plane perpendicular to the axis of the aperture and wherein at least one elastic tongue is formed on the inserting part, the free end of said tongue expanding outwardly in the radial direction with respect to the axis of said inserting part when it is kept in the free state and said free end of the tongue being contracted inwardly in the radial direction while it is passing through the guide face, and after said free end of the tongue has completely passed through the guide face, it returns to its original free state and is anchored to said abutting faces, whereby said inserting part is tightly connected to the socket.

4,240,184

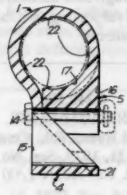
PIPE AND CABLE CLAMPS

Peter Delhees, Liverpool, and John P. Conlan, Chester, both of England, assignors to BICC Limited, London, England

Filed Nov. 2, 1978, Ser. No. 957,027

Int. Cl.³ B65D 63/00; F16L 33/04, 47/00

U.S. Cl. 24—279 6 Claims



2. A support clamp including a flexible member and fittings, integral with the flexible member or permanently attached to it, such that when the clamp is wrapped round a cable it can be secured and supported by means of said end-fittings, each said end-fitting having a planar faying surface which faying surfaces (i) are non-radial to the cable to a substantial degree when the clamp is wrapped round a circular cable with a circumference in a predetermined range; (ii) engage one another in relative positions that differ by displacement in the plane normal to the cable axis dependent on the magnitude of the circumference within that range; and (iii) extends substantially from end to end of each said end-fitting in the direction of said displacement.

4,240,185

METHOD FOR FULLING FABRIC

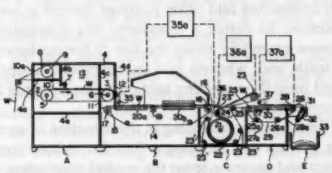
Shigeki Kondo, Inagi, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Chofu, Japan

Continuation of Ser. No. 779,832, Mar. 21, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,754

Claims priority, application Japan, Mar. 24, 1976, 51-33026

Int. Cl.³ D06C 17/00

U.S. Cl. 26—19 11 Claims



1. A method for fulling a wool-containing fabric in the form of a pliable sheet, said method comprising the steps of:

conveying said fabric sheet sequentially in order through a cooling station, a moisture applying station, and a drying station;

within said cooling station cooling said fabric sheet to a temperature below the freezing point of water and thereby expanding the spaces between the fibers of said fabric sheet;

at said moisture applying station, applying moisture to the thus cooled fabric sheet by subjecting said fabric sheet to first jets of steam at a maximum temperature of 100° C., thereby causing said fabric sheet to absorb said moisture,

and thereafter subjecting said fabric sheet to second jets of steam at a mimimum temperature of 100° C., said second jets of steam being at a higher temperature than said first jets of steam, thereby removing excess moisture from said fabric sheet and making the distribution of moisture in said fabric sheet uniform;

at said drying station drying said fabric sheet;

detecting varying tension of said fabric sheet at an area between said cooling station and said moisture applying station; and

controlling the speed of movement of said fabric sheet through said moisture applying station, in response to the amount of tension detected in said detecting step, such that said fabric sheet is maintained substantially tensionless during passage through said moisture applying station and during said steps of subjecting said fabric sheet to said first and second jets of steam.

4,240,186

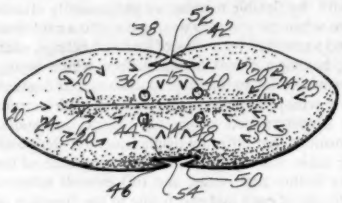
FRENUM LOCK

Charles W. Rector, 3304 Russel Rd., Centralia, Wash. 98531

Filed Sep. 21, 1979, Ser. No. 77,679

Int. Cl.³ A01N 1/00

U.S. Cl. 27—21 **12 Claims**



1. An improvement in an expression former for insertion between the lips and the teeth and gums of a corpse, comprising a thin plate of resilient, limitedly flexible, yet substantially inelastic material, having an inherent form-sustaining double curvature overall to fit the curvature of the dental arch, said plate further having a marginal shape defining a pair of wing-like portions and a medial connecting section, and a size and shape to extend along the gums beyond the lips at all points, spurs on said plate for engagement with the mount musculature, an upper portion offset forwardly of a lower portion thereof at least in the medial section, and a substantially continuous wall connecting said offset portions thereof at least in the medial section, to define a transverse bite-indentation ridge therebetween extending along the line of nonocclusion of the forward teeth; and, wherein said improvement comprises:

a. in said medial connecting section a first dividing line and a second dividing line;

b. said first dividing line being in the direction of an adjacent wing portion and defining a first flap whose free end is distinct and separate from the medial connecting section;

c. said second dividing line being in the direction of an adjacent wing portion and defining a second flap whose free end is distinct and separate from the medial connecting section;

d. the inner part of the first flap connecting with an adjacent wing-like portion;

e. the inner part of the second flap connecting with an adjacent wing-like portion;

f. said first dividing line and said first flap and said second dividing line and said second flap permitting wider spreading of the expression forming wing-like portions on insertion into the mouth of the corpse and permitting greater adaptation to the dental arch of the corpse.

4,240,187

METHOD AND APPARATUS FOR PLACING THREAD IN A TEXTURING APPARATUS AT SUPERSONIC SPEEDS

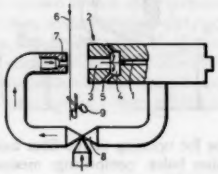
Heiko Herold, Neuss; Richard Herold; Rudolf Klee, both of Dormagen, and Edgar Muschelknautz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 956,115

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749188

Int. Cl.³ D02G 1/12, 1/16

U.S. Cl. 28—255 **5 Claims**



1. In a method for inserting a longitudinally extended thread through a narrow opening in a texturing nozzle perpendicular to the axis of the thread, wherein the thread has been severed downstream of the opening and is untensioned, the improvement comprising: conveying the thread through a first passage upstream of the narrow opening and having a cross section which is larger than that of the narrow opening and an annular space having a cross section which is larger than that of the first passage and disposed downstream of the first passage and upstream of the narrow opening by providing a supersonic propelling gas stream acting externally of the first passage and on the thread perpendicularly to the thread axis, and splitting the stream up upstream of the narrow opening only in the annular space into a central stream which passes through the narrow opening and a plurality of streams which are led off upstream of the narrow opening whereby insertion of the thread into the first passage and annular space is effected solely by the supersonic propelling stream.

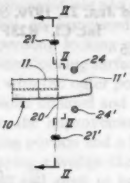
4. In a texturing nozzle of the type having a longitudinally extending thread to be inserted through a narrow opening perpendicular to the axis of the thread and wherein the thread is severed downstream of the opening becoming untensioned and means for inserting the untensioned thread through the narrow opening, the improvement wherein the inserting means comprises: propelling gas supply means for providing a supersonic stream of gas perpendicular to the axis of the thread which stream at the entrance to the narrow opening has a cross-section larger than that of the narrow opening and means connected upstream of the narrow opening for splitting up the stream into a central stream which passes through the narrow opening and a plurality of gas streams which are let off upstream of the narrow opening wherein the stream splitting means comprises a thread inlet duct upstream of the narrow opening and having a larger cross-section than the narrow opening, an annular space connected thereto upstream of the narrow opening and downstream of the inlet duct and having a larger cross section, and a plurality of outward-leading passages only in the side of the annular space, the propelling gas supply means being external of the thread inlet duct and wherein thread insertion through the inlet duct and annular space is effected solely by the supersonic propelling stream therefrom.

4,240,188

PROCESS AND DEVICE FOR INTERLACING MULTIFILAMENT YARNS

Giuseppe Zoina, Limbiate, Italy, assignor to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Apr. 25, 1979, Ser. No. 33,222
Claims priority, application Italy, Apr. 28, 1978, 22806 A/78
Int. Cl.³ D02G 1/16
U.S. Cl. 28—274 **19 Claims**



1. A process for interlacing multifilament yarns, said process comprising:

passing a multifilament yarn through an interlacing zone while guiding the travel of said yarn by a first fixed point positioned upstream of said interlacing zone and a second fixed point positioned downstream of said interlacing zone, said first and second fixed points defining therebetween a rectilinear path;

directing a jet of gas against said yarn during passage thereof through said interlacing zone, thereby interlacing the filaments of said yarn;

applying to said yarn, only in the area thereof against which said gas jet impinges, a force, separate from the force of said gas jet, in the direction of and substantially parallel to the axis of said gas jet, thereby imparting a tension to said yarn and deviating said yarn from said rectilinear path and causing said yarn to follow a non-rectilinear trajectory between said first and second fixed points;

restraining the freedom of motion of said yarn, due to said gas jet impinging thereon, in the direction of said axis of said jet; and

restraining the freedom of motion of said yarn in opposite directions which are perpendicular both to said axis of said gas jet and to the plane of said non-rectilinear trajectory of said yarn by means of restraining surfaces which continuously diverge from said area at which said gas jet impinges on said yarn.

8. An apparatus for interlacing a multifilament yarn passing through an interlacing zone, said apparatus comprising:

first means, positioned upstream of a yarn interlacing zone, and second means, positioned downstream of said interlacing zone, for guiding movement of a multifilament yarn to be passed through said interlacing zone, said first and second guiding means defining therebetween a rectilinear path;

nozzle means, positioned adjacent said interlacing zone, for feeding and directing a jet of gas against said yarn during passage thereof through said interlacing zone, and for thereby interlacing the filaments of said yarn;

said nozzle means including a curved convex surface directed toward said yarn passing through said interlacing zone, said curved convex surface having substantially at a vertex thereof an orifice through which said gas jet issues and is directed against said yarn;

said nozzle means being positioned relative to said first and second guiding means such that said curved convex surface, only at the area thereof adjacent said orifice, forms means for applying to said yarn, only at the area thereof against which said gas jet impinges, a force in the direction of and substantially parallel to the axis of said gas jet, and for thereby imparting a tension to said yarn and deviating said yarn from said rectilinear path and causing said yarn to follow a non-rectilinear trajectory between said first and second guiding means;

first restraining means, positioned adjacent said interlacing zone, for restraining the freedom of motion of said yarn, due to said gas jet impinging thereon, in the direction of said axis of said gas jet; and

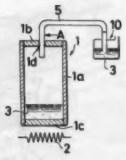
second restraining means for restraining the freedom of motion of said yarn in opposite directions which are perpendicular both to said axis of said gas jet and to the plane of said non-rectilinear trajectory of said yarn, said second restraining means comprising a pair of restraining surfaces positioned to define therebetween a space for passage of said yarn through said interlacing zone and located on opposite sides of said orifice, said restraining surfaces each having opposite ends, each said restraining surface continuously diverging from a portion thereof adjacent said orifice to said opposite ends, and adjacent ends of said pair of restraining surfaces defining openings for the free passage of gas.

4,240,189

METHOD OF PRODUCING HEAT PIPE ROLLER

Ryoichi Namiki, Hino, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 16, 1977, Ser. No. 861,419
Claims priority, application Japan, Dec. 25, 1976, 51/157160
Int. Cl.³ B23P 15/26; F28D 15/00
U.S. Cl. 29—157.3 R **7 Claims**



1. A method of producing a heat pipe roller having a chamber with a heating medium therein, the heat pipe roller having a hole which opens into said chamber, comprising the steps of:

orienting the heat pipe roller upright so that the hole extends upwardly,

placing a predetermined amount of the heating medium into said chamber through the hole,

connecting the heat pipe roller with a tank in which additional heating medium is held, through a tube, one end of which is tightly connected to the hole of the heat pipe roller and the other end of which is inserted into the additional heating medium in said tank,

heating the heat pipe roller to a temperature above the boiling point of the heating medium to vaporize a portion of the heating medium in said chamber so that the vapor of the heating medium fills said chamber entirely and other gases are evacuated from the heat pipe roller through the tube and into the heating medium in said tank, letting the other gases bubble into the heating medium in said tank, and

closing said tube to seal said chamber from the outside while said heating medium is vigorously being vaporized.

4,240,190

SPECIALTY HAND TOOL

Ross N. Bray, 217 N. Main St., Lamar, Colo. 81052

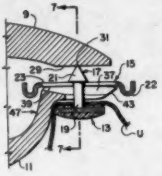
Filed Aug. 22, 1979, Ser. No. 68,675
Int. Cl.³ B23P 19/04; B25B 7/00
U.S. Cl. 29—268 **8 Claims**

1. A plier tool primarily for use in removing a stud retainer from about a stud on a trim button, said stud having a substantially cylindrical shaft upstanding from said trim button with a

substantially cone-shaped head atop thereof, the base of said cone-shaped head extending outwardly of said shaft for a first distance giving the stud an overall shape substantially resembling an arrow, said stud retainer having a resilient portion with a substantially circular hole therethrough of slightly smaller diameter than the width of the cone-shaped head at the base thereof, said resilient portion of said stud retainer having slits extending outwardly of said hole forming a plurality of resilient sections inherently biased toward a first position with adjacent edges of adjacent sections substantially aligned with each other, said stud being retained in said stud retainer by inserting said cone-shaped head into and through said hole in a first direction whereby said resilient sections adjacent said hole are first flexed slightly away from said first position in said first direction and then resiliently snap back to said first position as the base of said cone-shaped head passes through said hole wherein said cone-shaped head cannot pass freely through said hole in a second direction opposite to said first direction while said resilient sections are in said position, said plier tool comprising:

a pair of elongated members having respective first and second end portions and means for mounting said pair of members to each other between said respective end portions for pivotal movement relative to each other about an axis with said respective first end portions forming opposing first and second jaw members, said pair of members being movable between an open position with said jaw members spaced from each other and a closed position with said jaw members substantially abutting one another,

said first jaw member having a first surface for engaging the apex of said cone-shaped head of said stud, and



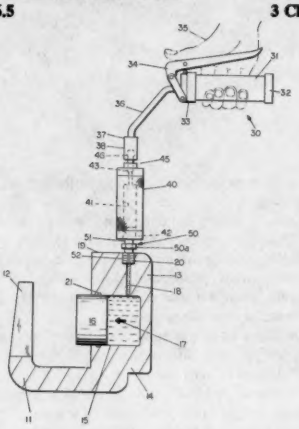
said second jaw member being bifurcated into two, free standing portions extending in directions outwardly of said pivotal axis, each of said two portions having a corresponding first edge extending outwardly of said pivotal axis from a substantially common location and together forming a first, generally U-shape with said common location being at the base of said first U-shape, said first U-shape being dimensioned to pass the base of said cone-shaped head of said stud therethrough, said second jaw member further having a surface intersecting and extending outwardly of said first edges substantially along the entire length of said first U-shape, said surface being inclined toward said first jaw member when said jaw members are in said closed, substantially abutting position, said inclined surface terminating in a second edge having a second, generally U-shape of larger dimension than said first U-shape, said second U-shaped edge being positioned closer to said first surface of said first jaw member than said first U-shaped edge when said jaw members are in said closed position whereby said jaw members in said open position can be positioned with said stud shaft between said two, free standing portions of said second jaw member and said first surface of said first jaw member abutting the apex of said cone-shaped head of said stud and said jaw members can then be moved toward said closed position wherein said resilient sections of said stud retainer abut against said larger, second U-shaped edge while the base of said cone-shaped head of said stud presses against and flexes said resilient sections immediately adjacent said hole toward said inclined surface of said second jaw member and away from said first position in said second direction opposite to said first direction until the base of said cone-shaped head passes through said hole and said resilient sections snap back to said first position thereby releasing said stud from said stud retainer.

4,240,191

METHOD AND DEVICE FOR REMOVING DISC BRAKE PISTON

Robert F. Schroyer, 215 Poinsetta Ave., Toledo, Ohio 43612

Filed Jun. 21, 1979, Ser. No. 50,876
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—426.5 **3 Claims**



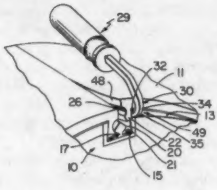
1. A method of removing a piston stuck in its cylinder located in a disc brake caliper which comprises impressing or introducing grease, under pressure, to an existing port in said caliper which, through a passageway, leads to the interior of said cylinder and continuing said introduction of grease until the passageway and interior of said cylinder are filled with grease whereupon continued introduction and/or increased pressure of said grease causes said piston to be slowly, safely and controllably expelled from said cylinder.

4,240,192

TOOL FOR AND METHOD OF REMOVING A DIE-CUTTING MAT FROM A ROTARY ANVIL

Richard F. Davis, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Jun. 22, 1979, Ser. No. 51,294
Int. Cl.³ B23P *19/04*; B25B *27/16*
U.S. Cl. 29—426.6 **18 Claims**



1. In a tool for removing a die-cutting mat from a rotary anvil wherein said anvil comprises, an outer substantially cylindrical surface having a pair of spaced holding surfaces extending radially inwardly from said cylindrical surface and a planar

surface interconnecting the terminal inner edges of said holding surfaces, said holding surfaces and planar surface defining opposed walls and a bottom wall respectively of a longitudinal groove in said anvil and an immobile locking wedge disposed within said groove and having a fixed locking surface on each side thereof, each locking surface being spaced from an associated one of said holding surfaces to define a flange-receiving channel therebetween, and said die-cutting mat being disposed against said anvil and having opposite end portions terminating in a pair of identical flanges each disposed substantially perpendicular to the main body of said mat, each of said flanges having an inner portion adjoining said mat and an outer portion yieldingly compressed within an associated channel, each outer portion having a cooperating locking surface which is snap locked against an associated locking surface of said wedge to lock its flange in position with the outer portion yieldingly compressed within its associated channel and each outer portion having a terminal edge, the improvement wherein said tool comprises, a mat-engaging portion and a handle therefor, said mat-engaging portion having a wedge-like end adapted to be wedged between said mat and anvil to provide an initial lifting of an associated flange away from said anvil to thereby dislodge a portion of the cooperating locking surface of the associated mat flange from its locking surface of said wedge, said mat-engaging portion having a roughly semicircular portion adjoining said wedge-like end wherein said semicircular portion has a convex outside surface and a concave inside surface, said convex outside surface being adapted to engage said anvil and serve as a fulcrum for prying a terminal end portion of said associated flange from within its channel, said concave inside surface being adapted to engage a portion of said terminal edge with said wedge-like end against the inner portion of said associated flange thereby enabling pulling of said tool using said handle with said concave inside surface serving as a prying surface which dislodges the cooperating locking surface of said associated flange from the locking surface of said locking wedge along the full length of each upon pulling said tool along said cylindrical surface adjacent an associated holding surface.

4,240,193

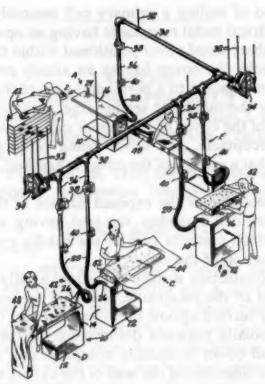
METHOD OF STUFFING COMPRESSIBLE PRODUCTS INTO FLEXIBLE COVERS

Reuben J. Krein, Fort Smith, Ark., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Division of Ser. No. 846,410, Oct. 28, 1977, abandoned. This application May 18, 1979, Ser. No. 40,391

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—451 **5 Claims**



1. A method of applying a flexible covering sheath in close-fitting relation to an air pervious expanded flexible filler, consisting of the steps of

mounting the filler upon a support having multiple openings selectively connectible with a source of subatmospheric pressure,

draping a flexible sheet of air impervious material over the filler at substantially all exposed surfaces thereof,

deaerating and shrinking said filler by connecting said support openings to said source of subatmospheric pressure

applying said sheath around said deflated filler said sheet and said support, and

separating said filler sheet and encircling sheath as a unit from said support

whereby said filler is re-aerated and expanded within said sheath.

4,240,194

AUTOMATIC TOOLING MACHINE

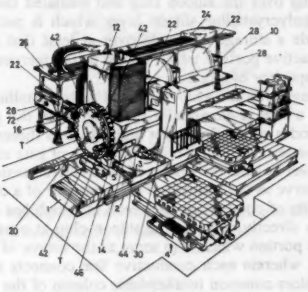
Sumiaki Inami; Haruhiko Koike, and Motohiko Yoshida, all of No. 1, Aza Norifune, Oaza Koguchi, Niwa-gun Aichi Prefecture, Japan

Continuation-in-part of Ser. No. 940,891, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 783,459, Mar. 31, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,945

Claims priority, application Japan, Apr. 9, 1976, 51/40799; Apr. 23, 1976, 51/47100; Apr. 26, 1976, 51/48140

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **11 Claims**



1. In an automatic tooling machine of the type including a spindle carrier having a spindle for supporting a machining tool, said spindle carrier including tool drum mounting means for rotatably supporting a tool drum with plural machining tools thereon, means for transferring a selected machining tool between said tool drum supported on said tool drum mounting means and said spindle, and means for selectively moving said spindle in X, Y and Z directions to position said selected machining tool in a desired operating position, the improvement comprising:

a fixedly positioned drum storage track separate from said spindle carrier and extending in a longitudinal direction, said rack including a plurality of drum support members for storing a plurality of said tool drums;

said spindle carrier having integral therewith a carriage track;

means for selectively moving said spindle carrier to a position such that said carriage track is positioned adjacent and aligned with a selected said drum support member;

means, mounted on said spindle carrier, for moving the said tool drum associated with said selected drum support member along said carriage track in a selected direction between said selected drum support member and said tool drum mounting means; and

means, mounted on said spindle carrier, for rotating said tool drum on said tool drum mounting means and for thereby

selectively rotatively aligning said tool drum with respect to said tool drum mounting means.

4,240,195

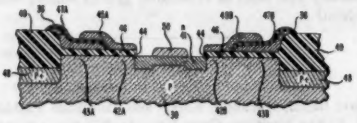
DYNAMIC RANDOM ACCESS MEMORY

James T. Clemens, Allentown; John D. Cuthbert, Bethlehem; Frank J. Procyk, Center Valley, and George M. Trout, Macungie, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 15, 1978, Ser. No. 942,861

Int. Cl.³ B01J *17/00*

U.S. Cl. 29—571 **3 Claims**



1. A process for making a random access memory in which a plurality of memory cells are arranged in rows and columns and each memory cell includes a transistor and a capacitor with one plate of the capacitor being merged with a virtual drain zone of the transistor, which includes the steps of preparing a silicon chip which includes active portions where memory cells are to be formed and passive portions which serve to isolate the active portions CHARACTERIZED IN THAT the process includes the steps of

depositing over the silicon chip and insulated therefrom a first polycrystalline silicon layer which is patterned to provide a storage electrode over at least that region of each active portion which serves as the merged plate of the capacitor of a cell,

depositing over the chip a second polycrystalline silicon layer which is electrically insulated from the patterned electrodes of the first layer and which is thereafter suitably patterned to form both a plurality of gate electrodes, one over at least the region of each active portion which is to serve as the channel of the transistor of a cell, and a plurality of conductive lines each of which has a portion which directly contacts the silicon chip at a part of the active portion which is to serve as the source of the transistor, wherein each conductive line connects all of the transistors common to a separate column of the array,

converting the conductivity type of each active portion which is to serve as a source of a transistor, both in the region between the gate electrode and the directly contacting portion of the conductive line and in a region underlying the directly contacting portion, and

forming over the chip and insulated therefrom a second plurality of lines, each line of said second plurality electrically contacting the gate electrodes of all the transistors common to a separate row of the array.

4,240,196

FABRICATION OF TWO-LEVEL POLYSILICON DEVICES

Richard M. Jacobs, Allentown, Pa., and Ashok K. Sinha, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,337

Int. Cl.³ B01J *17/00*

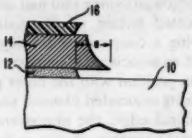
U.S. Cl. 29—578 **4 Claims**

1. A method of fabricating an LSI MOS device comprising the steps of

forming a structure that comprises, in order, on a silicon substrate (**10**): a relatively thin layer of silicon dioxide (**12**), a patterned layer (**14**) of doped polysilicon and a patterned relatively thick layer (**16**) of silicon dioxide, wherein portions of the relatively thick layer of oxide overhang portions of the polysilicon layer, at least part of each of said layers constituting a permanent constituent portion of said LSI MOS device to be fabricated,

etching the relatively thick oxide layer to remove said overhanging portions, whereby, at the same time, portions of said relatively thin layer under said polysilicon layer are undercut relative to said polysilicon layer to cause portions of said polysilicon layer to overhang said relatively thin layer,

CHARACTERIZED IN THAT said method comprises the additional steps of



etching said polysilicon layer (**14**) to remove the overhanging portions thereof,

oxidizing said etched structure to cover all exposed surface portions of said polysilicon layer and said substrate with a layer of silicon dioxide,

and forming another patterned layer (**22**) of doped polysilicon in overlapping spaced-apart relationship with respect to said first-mentioned layer (**14**) of polysilicon to form a two-level polysilicon structure.

4,240,197

METHOD FOR SEALING A PRIMARY CELL

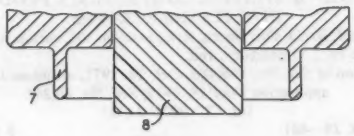
Ernest E. Hamsag, Chene-Bougeries, Switzerland, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Aug. 4, 1978, Ser. No. 931,005

Claims priority, application Switzerland, Aug. 8, 1977, 9717/77

Int. Cl.³ H01M *2/04*

U.S. Cl. 29—623.2 **8 Claims**



1. A method of sealing a primary cell assembly which includes a cylindrical metal receptacle having an open end and a closed end, a sheet metal cover positioned within the open end of the receptacle, the cover having an axially extending deformed portion adjacent to a peripheral part of the cover and a hard resilient thermoplastic sealing ring positioned between the periphery of the cover and the inner side of the cylindrical wall of the receptacle, said cover being positioned in said receptacle so that a surface of the cover is exposed, the method comprising:

pressing a tool against the exposed surface of the cover of the primary cell assembly, the tool having a contacting surface which contacts part of the axially extending deformed portion of the cover;

moving the contacting surface of the tool axially toward the closed end of the receptacle, the axial movement of the contacting surface against the contacted part of the cover causing radially outward deformation of the peripheral part of said cover to radially compress said sealing ring against the inner side of the wall of the cylindrical receptacle; and

preventing inelastic radially outward deformation of the

wall of the cylindrical receptacle during said axial movement of the tool.

4,240,198

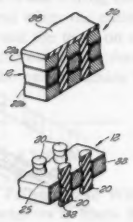
METHOD OF MAKING CONDUCTIVE ELASTOMER CONNECTOR

Oscar Alonso, Westminster, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 912,381, Jun. 5, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,255

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—876 **1 Claim**



1. A method of making a conductive elastomer connector comprising the steps of:

providing three metal plates each having a set of holes therein, the holes in said sets being arranged in identical patterns;

the holes in at least one of said plates being formed by etching;

forming a nonconductive layer on said one of said plates covering the upper and lower surfaces thereof and the walls of said holes;

stacking said plates with said one plate disposed between the other two plates and with the sets of holes in the three plates aligned;

filling said holes with a conductive elastomer thereby forming conductive elastomer rods in said holes; and

removing by etching said other two plates from said one plate with said conductive elastomer rods remaining in said plate thereby extending above and below the coating on the respective top and bottom surfaces thereof.

4,240,199

SHAVING APPARATUS

Ebbe Boiten; Eduard W. Tietjens, and Jochem J. De Vries, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

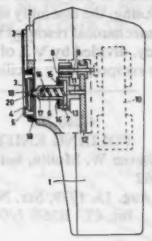
Filed Sep. 28, 1978, Ser. No. 946,560

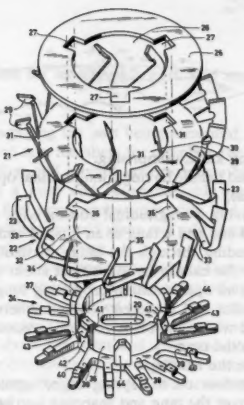
Claims priority, application Netherlands, Nov. 28, 1977, 7713046

Int. Cl.² B26B *19/14*

U.S. Cl. 30—43.6 **8 Claims**

1. A shaving apparatus having a circular shear plate provided with hair-entrance apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body, cutters extending from the circumference of said central body toward the shear plate, lead cutters respectively associated with and movable relative to the cutters, each lead cutter, with reference to the direction of rotation of the cutting unit, being positioned in front of its associated cutter, respective connecting arms extending from the lead cutters to the central body of the cutting member, and a coupling piece separate





from said cutting member and said connecting arms for securing the connecting arms to said central body.

4,240,200

DRYSHAVING APPARATUS

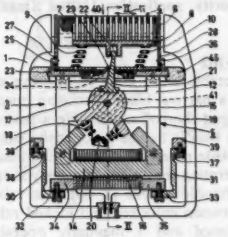
Romuald L. Bukoschek, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,271

Claims priority, application Austria, Feb. 10, 1978, 970/78

Int. Cl.³ B26B *19/02*

U.S. Cl. 30—43.92 **5 Claims**



1. A dryshaving apparatus which comprises a housing; a shaving head including a stationary upper cutter and a cooperating lower cutter; an oscillating armature motor for driving the lower cutter in a reciprocatory oscillating movement, the shaving head and the oscillating-armature motor being connected and constituting an assembly; and means to mount the

assembly in the housing by elastic elements only, at least one of the elastic elements being a strip-shaped integral hinge extending transversely to the oscillating movement, said integral hinge being connected at one end to the assembly and at its other end to the housing, the assembly together with the elastic elements having a mechanical resonant frequency less than the oscillation frequency, divided by $\sqrt{2}$, of the parts of the assembly performing the reciprocatory oscillating movement.

4,240,201

FOLDING KNIFE

Scott Sawby, and Steven W. Mullin, both of Rte. 1, Box 186A, Samuels, Id. 83862

Filed Aug. 13, 1979, Ser. No. 65,939
Int. Cl.³ B26B *1/04*
U.S. Cl. 30—161 **11 Claims**

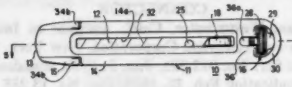
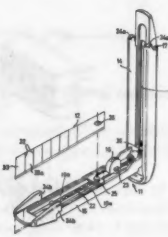
1. A folding knife, comprising:
an elongated handle having a longitudinal open blade receiving recess;
a blade having a longitudinal cutting edge extending to an outward end and a tang at an inward end;
a pin extending through the tang, pivotably mounting the blade to the handle for movement about a transverse axis between an open position projecting longitudinally from the handles and a closed position wherein the blade is received within the blade receiving recess;
a catch on the tang;
a spring on the handle;
a latch member on the spring urged against the tang for sliding over the tang and snapping into engagement with the catch when the blade is moved to the open position, securely locking the blade against pivotal movement about the pin relative to the handle;
a cam surface on the spring, adjacent the latch member and facing the blade receiving recess; and
a pushbutton actuator means on the handle, manually movable against the cam surface for moving the latch member from engagement with the catch.

4,240,202

REPLACEABLE BLADE KNIFE

Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, Great Britain

Filed Sep. 6, 1978, Ser. No. 939,953
Claims priority, application United Kingdom, Sep. 8, 1977, 37574/77
Int. Cl.³ B26B *3/06*
U.S. Cl. 30—162 **3 Claims**

1. A retractable blade knife comprising an elongated knife handle with a narrow blade receiving opening at a forward longitudinal end thereof and having a pair of separable elongated mating handle halves on opposite sides of and defining the narrow blade receiving opening, the mating handle halves having cooperating means for relatively longitudinally sliding the mating handle halves in opposite relative longitudinal directions between unlocked and locked relative longitudinal positions thereof and a manually operable blade carrier mounted within the handle between the handle halves for supporting a blade therebetween for manually longitudinally shifting the blade between a retracted sheathed position within the handle and a forward unsheathed position extending through the blade opening, the handle having locking means for locking the handle halves together in their said locked relative positions and comprising sidewise facing, opposed cooperating shoulders on the handle halves respectively engageable to interlock the two halves together as the two halves are relatively longitudinally shifted from their said unlocked to their said locked relative positions and drive means, at the opposite longitudinal end of the handle from said forward end, manually operable to positively relatively longitudinally drive



the mating handle halves from their said unlocked to their said locked relative positions and to return the handle halves from their said locked to their said unlocked relative positions, the locking means permitting the handle halves to be separated when in their said unlocked relative positions to provide access to the blade carrier.

4,240,203

FLEXIBLE SAW

Robert M. Johnson, 11 Jana Dr., Weston, Conn. 06883

Continuation of Ser. No. 947,017, Sep. 29, 1978, Pat. No. 4,193,188. This application Oct. 17, 1979, Ser. No. 85,549
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.³ B23D *45/00*
U.S. Cl. 30—166 R **7 Claims**

1. A flexible saw for sawing high branches from trees comprising:
a flexible cutting area, and

flexible holding means on each end of the flexible cutting area to oscillate the cutting area against a branch of a tree to be cut,

said cutting area including:

a flexible base member and a series of spaced apart cutting elements secured thereto, each of said spaced apart cutting elements having cutting teeth on one end thereof and a smooth surface on an opposite end thereof, the teeth on every other one of said cutting elements facing toward one end of said flexible base member and the teeth of each of said cutting elements in between every other one of said cutting elements facing towards the opposite end of said flexible base member such that the ends of each of said cutting elements having the teeth face each other and the ends of each of the cutting elements having the smooth surface face each other,

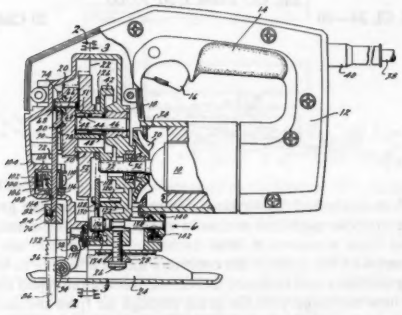
whereby teeth on each of said cutting elements facing in said one direction will cut when the cutting area is drawn in said one direction, and the teeth on each of said cutting elements facing in the other direction will be cleared of debris, and when the cutting action is reversed, vice-a-versa.

4,240,204

JIG SAW

Richard E. Walton, II, Fallston, and William D. Sauerwein, Joppa, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 19, 1979, Ser. No. 50,042
Int. Cl.³ B23D *49/00*; B27B *11/00*
U.S. Cl. 30—393 **18 Claims**



1. A drive mechanism for a jig saw, comprising:

a casing having a motor horizontally disposed therein;

a generally vertically disposed saw blade carrier vertically reciprocable by said motor and having means at its lower end for attaching a saw blade;

means defining an upper carrier support comprising a support surface in said casing slidingly engaged by the upper portion of said saw blade carrier;

means defining a lower carrier support comprising a saw blade guide attached to said casing and positioned to engage the trailing edge of a reciprocating saw blade attached to said saw blade carrier;

means defining an intermediate carrier support comprising guide means in said housing for biasing said saw blade carrier toward said support surface and a saw blade attached to said carrier against said saw blade guide, whereby said support surface and said saw blade guide determine the reciprocal axis of said saw blade carrier and saw blade;

a rotary crank plate drivingly connected to said motor; and

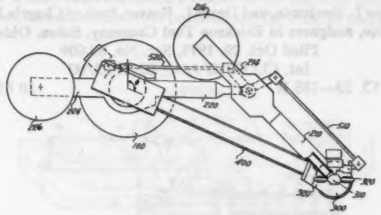
said support surface being disposed on said crank plate.

4,240,205

COORDINATE MEASURING MACHINE

John J. Tuss, Englewood, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 20, 1979, Ser. No. 67,962
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—1 M **10 Claims**



1. An apparatus for measuring a part, said apparatus comprising:

a base;

a probe for engaging the part being measured;

first and second arm members for coupling the probe to the base, said first and second arm members being coupled together at a joint and being movable through a first plane, said first arm member mounting said probe generally perpendicular to said plane and said second arm member mounted to said base;

means for counterbalancing the weight of the probe and arm members about the base, said means including a first counterbalance member coupled to said first arm member for counterbalancing the weight of the first arm member and the probe about the joint and a second counterbalance member for counterbalancing about the base the weight of the second arm member and the counterbalanced first arm member; and

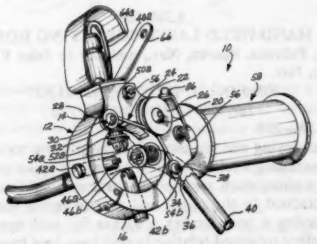
means coupled between said base and probe for measuring the location of the probe as an indication of the measurement of the part being measured.

4,240,206

OVALITY MEASURING DEVICE AND METHOD

Joseph M. Baresh, and Robert E. Nash, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1979, Ser. No. 611
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—174 Q **17 Claims**



1. An apparatus for determining ovality of a bent tube with the apparatus comprising: head means for permitting said head to be rotated open and closed to permit placement of said head around tubing to be measured; first means disposed in said head for electromechanically diametrically measuring across a major diameter of the tubing; second means disposed in said head located at an angle of 90 degrees from said first measuring

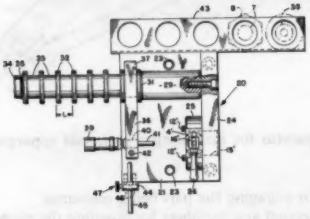
means and along the same radial plane, for electromechanically diametrically measuring across the minor diameter of the tubing; and means responsive to said first and second measuring means for electronically summing the measurements to determine and to display the ovality of the tubing.

4,240,207

TOOL PRESETTING DEVICE

Milton L. Benjamin, and David L. Beaver, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Oct. 29, 1979, Ser. No. 89,609
Int. Cl.³ G01B 5/02; B27G 23/00
U.S. Cl. 33—185 R **10 Claims**



1. A device for presetting an end working tool in a tool holder having tool gripping means at one end operative selectively to permit longitudinal adjustment of the tool with respect to the tool holder and to lock the tool in adjusted position and having a shank at the other end forming a locating shoulder; said device comprising a tool holder support having a bore to slidably receive said shank for engagement of said shoulder with a locating face of said support; an elongated bar secured to said support in spaced parallel relation to the axis of said bore; said bar having a series of uniform axially spaced apart peripheral grooves; an adjustable member extending radially from said bar with one end frictionally insertable into any groove for course adjustment of said member toward and away from said locating face in increments corresponding to the spacing of said grooves; said adjustable member having fine adjustment means at its other end adapted to be adjusted toward and away from said locating face against which the end of a tool is adapted to be engaged by longitudinal adjustment of the tool with respect to said locating shoulder and locating face; said adjustable member being swingable about the axis of said bar to a position whereat said other end of said adjustable member and said fine adjustment means laterally clears said bore for axial insertion and withdrawal of said shank into and from said bore.

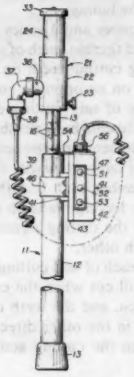
4,240,208

HAND-HELD LASER SURVEYING ROD

Marie S. Pehrson, Sparks, Nev., assignor to John V. Pehrson, Sparks, Nev.

Filed Oct. 1, 1979, Ser. No. 81,027
Int. Cl.³ G01B 15/06, 11/26
U.S. Cl. 33—293 **6 Claims**

1. A surveying rod for use with a laser beam rotatable in a plane comprising a telescopic rod having an upper section and a lower section, each said section having height markings, a sensor attached to the upper end of said upper section, said sensor having a base having a socket for said upper end, a vertical piece mounted relative to said base, said base having a plurality of upper solar cells all at the same elevation, a plurality of center solar cells at the same elevation and below said upper cells and a plurality of lower solar cells at the same elevation and below said center cells, a readout on the upper end of said lower section, said readout comprising a box, three vertically spaced lights mounted on said box and a pointer positioned to point to said height markings, and electrical means interconnecting said sensor and said readout to illuminate one said light when said beam intercepts one of said upper cells, a second said light when said beam intercepts one of said



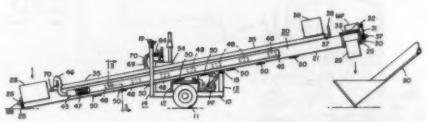
center cells and a third said light when said beam intercepts one of said lower cells.

4,240,209

METHOD OF AND APPARATUS FOR DRYING GRAIN AND THE LIKE

Earl A. Cuthbertson, 309 N. Broadway, and Bobbie G. Cuthbertson, R.R. #2, both of Toledo, Iowa 52342

Filed Jun. 19, 1978, Ser. No. 916,945
Int. Cl.³ F26B 3/00, 17/00
U.S. Cl. 34—10 **20 Claims**



17. A method of drying grain comprising: moving the grain to be dried through first enclosure means; circulating a heated liquid from a source in heat exchange relation but not in contact with the grain in the enclosure means effective to heat the grain and expel moisture therefrom; passing the liquid after said heat exchange with the grain through air from the atmosphere in heat exchange relation effective to heat the air and then returning the liquid to the source; passing the air after said heat exchange with the liquid into the grain in the enclosure means to entrain moisture expelled from the grain by said heat exchange between the liquid and the grain; and removing said air and moisture from the enclosure means.

4,240,210

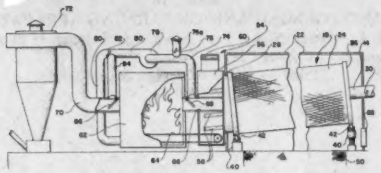
METHOD AND APPARATUS FOR UTILIZING SOLAR ENERGY IN A WATER AND WASTE MANAGEMENT SYSTEM

Barney K. Huang, 2008 Varnell Ave., Raleigh, N.C. 27612

Filed Apr. 11, 1979, Ser. No. 29,267
Int. Cl.³ F26B 3/28
U.S. Cl. 34—39 **19 Claims**

1. A method of utilizing solar energy for drying waste material comprising the steps of: transferring the particular material, such as water or waste material, to a rotary chamber; enclosing the rotary chamber within a drying structure having a transparent wall of substantial area for allowing solar radiation to pass therethrough; draining water from the material within said rotary chamber to leave a sludge like material

therein; rotating said rotary chamber and collecting solar energy about the wall structure thereof and transferring the collected solar energy inwardly to dry the sludge material; and



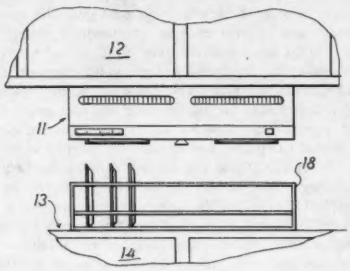
conveying the dried sludge material from the rotary chamber where the dried sludge material may be collected and suitably utilized.

4,240,211

DISH DRYING APPARATUS

Charles W. Keever, Jr., Laurel, Mont., assignor to Robert Mace and Mike Mace, both of Laurel, Mont., part interest to each

Filed Apr. 23, 1979, Ser. No. 32,395
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—90 **3 Claims**



1. Dish drying apparatus attached to the bottom of a cabinet located above a counter surface, said dish drying apparatus including a housing disposed above dishholding means, said housing including a top face, a bottom face and a plurality of side faces, housing support means connecting said top face of said housing with said bottom of said cabinet, a plurality of outlet openings in the bottom face of said housing remote from said cabinet, a plurality of inlet openings in a side face of said housing, duct means connecting said outlet openings in the bottom face of said housing with said inlet openings in said side face of said housing, rotatable fan means disposed along the length of said duct means, filter means associated with said duct means, heating means disposed in said duct means for heating air being transferred therethrough, thermostatic control means associated with said heating means, electrical drive means for said rotatable fan means, switch means for said electrical drive means and said heating means, and timing means associated with said switch means.

4,240,212

THERMAL SIGNATURE TARGETS

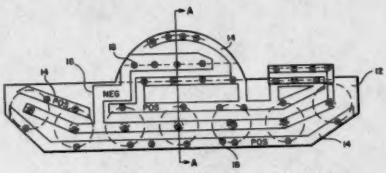
Albert H. Marshall, Maitland; Bon F. Shaw; George A. Siragusa, both of Winter Park, and Herbert C. Towle, Maitland, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1979, Ser. No. 50,578
Int. Cl.³ F41G *3/26*; H05B *3/02, 3/16*
U.S. Cl. 434—11 **16 Claims**

1. Structure that simulates the thermal appearance of an object by imitating the infrared signature that the object is known to provide, comprising in combination:

a mounting member having front and rear surfaces;

material that is substantially two-dimensional and of uniform linear resistivity, and that is infrared emissive when electrically activated, applied to the front surface of said member in a predetermined pattern that includes an arrangement of conductive strips overlaying said material for distributing electrical current to said material, and that are spaced such that some portions of the material will be more emissive than other portions and the relative thermal



intensities over said pattern will approximate the thermal appearance of said object when the structure is electrically activated;

electrically positive and electrically negative busses affixed to the rear surface of said member opposite said member from the conductive strips on said front surface;

contacts electrically coupling said busses on said rear surface to said conductive strips on said front surface; and

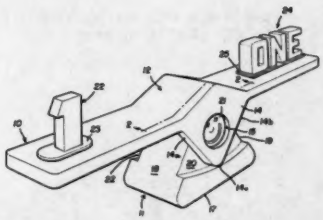
a source of electrical energy coupled to said busses.

4,240,213

EDUCATIONAL AMUSEMENT DEVICE FOR MATCHING WORDS WITH NON-VERBAL SYMBOLS

Matthew R. Lutin, 1551 N. 12th Ct., Hollywood, Fla. 33020

Filed Oct. 3, 1979, Ser. No. 81,544
Int. Cl.³ G09B *19/02*
U.S. Cl. 434—194 **8 Claims**



1. In an educational amusement device for teaching a player to match words with corresponding non-verbal visual symbols, said amusement device having a balance arm and means providing a horizontal pivotal fulcrum for the balance arm at its center of gravity, the improvement which comprises:

a plurality of integral first game pieces of different weights which display different non-verbal symbols;

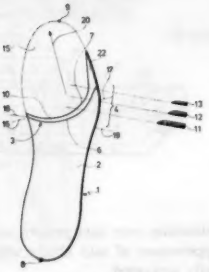
a plurality of integral second game pieces displaying different words which correspond respectively to the non-verbal symbols displayed by said first game pieces, each of said second game pieces having the same weight as the respective first game piece which displays the corresponding non-verbal symbol;

and visual indicator means for indicating whether the balance arm is horizontally balanced by first and second game pieces of equal weight on opposite sides of its pivotal fulcrum.

4,240,214
FOOT-SUPPORTING SOLE

Rolf Sigle, and Jakob Sigle, both of Friedrich-Siller-Strasse 36, D 7014 Kornwestheim, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,089
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 7721149; Jan. 12, 1978, 2801118
Int. Cl.³ A43B *13/12, 13/14, 13/38*
U.S. Cl. 36—30 R 16 Claims

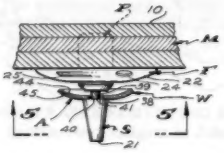


1. A sole for a shoe, said sole comprising a body having a wear resistant layer, said wear resistant layer having a contour at least in part conforming to the shape of the foot and having sections of relatively varying thickness obtaining different rigidity, one of said sections lying generally to the rear of the area of the hallux ball and extending free of the area of the hallux ball along the periphery of the sole along the outside of said foot a distance forward of the hallux ball, said one section being of greater thickness than adjacent sections including the area of the hallux ball to thereby have greater rigidity than said adjacent sections.

4,240,215
SHOE SPIKE

Mayo Broussard, 5711 Santa Monica Blvd., Hollywood, Calif. 90038

Filed Mar. 5, 1979, Ser. No. 17,457
Int. Cl.³ A43C *15/00*; A43B *5/00*
U.S. Cl. 36—67 D 18 Claims



1. In combination with a shoe having a downwardly disposed earth-engaging surface, an anti-fouling shoe spike structure carried by said shoe and having an elongate vertical earth-engaging spike depending from the earth-engaging surface of the shoe, said spike having upper and lower portions, and a soil repelling barrier being located thereon adjacent said upper portion are joined, with the lower portion free of barrier material, said barrier having a diametrical width transverse to said spike less than the length of said spike structure;

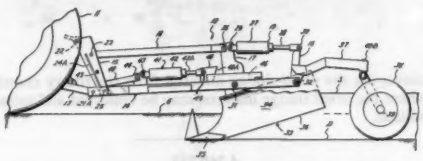
means for constraining said barrier to remain adjacent said upper portion with said lower portion remaining bare at all times during use,

said barrier being structured to permit substantially free movement of earth upwardly relative to said earth-engaging surface and said spike and circumferentially and radially about the spike, said barrier resisting retention of damp earth on and about said spike.

4,240,216
LAND FORMING AND/OR FARMING APPARATUS

Virgil L. Martel, Nome, Tex., assignor to Lehman-H Feeder & Plow, Inc., Corpus Christi, Tex.

Filed Mar. 26, 1979, Ser. No. 24,002
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—98 6 Claims



1. In land forming and/or farming apparatus, which comprises a frame adapted to be towed behind a tractor having a three point hitch, said frame including a longitudinally extending beam having a front end pivotally attachable to the lower arms of the hitch, a front post having a lower end pivotally connected to the beam and an upper end pivotally attachable to the upper arms of the hitch, a rear post pivotally connected to the beam near its rear end, an intermediate post pivotally connected to the beam intermediate the front and rear posts, a front link extending between and pivotally connected to the front and intermediate posts, a rear link extending between and pivotally connected to the intermediate and rear posts, a wheel mounted on the rear post for rolling engagement with the ground behind the blade, and an element carried by the intermediate post for engaging the ground beneath the beam, said rear link being extendible and retractable to control the elevation of said cutting edge; the improvement comprising a part mounted on the frame for guided movement longitudinally of the beam, a fluid-operated, extendible and retractable actuator having one end pivotally connected to the beam and its other end pivotally connected to said part for moving said part between a first position in which a bearing surface thereon is spaced from an oppositely facing bearing surface on one of the posts, and a second position in which it is forced against said bearing surface on the post so as to cause the upper end of the post to swing rearwardly about its pivotal connection to the beam, and thereby lift the rear end of the frame about its attachment to the three point hitch.

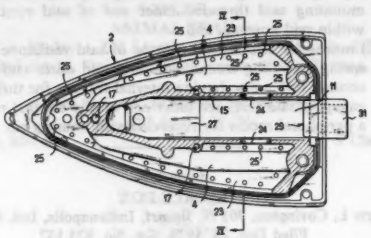
4,240,217
ELECTRIC STEAM IRON

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Dec. 11, 1978, Ser. No. 968,299
Claims priority, application France, Dec. 21, 1977, 77 38644
Int. Cl.³ D06F *75/18*
U.S. Cl. 38—77.83 10 Claims

1. In an electric steam iron comprising a water reservoir fitted with a device for injecting water into a vaporization chamber formed in a sole-plate which is heated by a U-shaped electric resistor, the arms of the U being disposed along the two sides of the iron which have the greatest length and the point of injection being located in the vicinity of the base of the U and said vaporization chamber being adapted to occupy at least part of the space located between the resistor arms and to communicate with a distribution chamber through a partition-wall, said distribution chamber being in communication with the exterior through discharge holes having outlets on the underface of the sole-plate; the improvement wherein the vaporization chamber occupies substantially the entire space formed between the arms of the resistor and extends to the rear

edge of the sole-plate, a communication between the two chambers being established by means of recesses formed in the partition-wall and located in the rear portion of the iron, the vaporization chamber having a substantially constant cross-



section in planes at right angles to the normal direction of forward displacement of the iron and terminates at the rear end of the iron in a pluggable orifice which has substantially the same cross-sectional area.

4,240,218

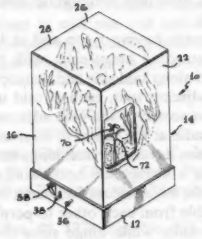
AUDIO-VISUAL DISPLAY DEVICE

Garvin S. Kotzin, 20934 Hackney St., Canoga Park, Calif. 91316

Filed Feb. 2, 1979, Ser. No. 9,278

Int. Cl.³ G09F *19/02*

U.S. Cl. 40—407 **10 Claims**



1. An audio-visual display device comprising:

a housing for the containment of soil and for the containment of living, natural sized plants, said housing substantially enclosing a space in which the soil and plants are located, said housing having at least one transparent area for the entry of light into the enclosed space to aid in maintaining the living plants and for inspection of the enclosed space;

a motor; capstan in said enclosed space and driven by said motor, said capstan being an upright, open-top tube;

a model mounted in said capstan, said model being mounted on the wire which extends into said open top capstan tube so that said model is removably supported in said capstan tube, said model being a reduced-scale model of a natural creature, said model being positioned among the plants in said enclosed space for moving in said enclosed space to provide animation so that motion of said model of a natural creature in said space among the plants growing therein provides the illusion of a larger space and larger plants; and

a music-producing instrument driven by said motor so that, when said capstan is moving, music is produced.

4,240,219

SYSTEM FOR DISPLAYING A NUMBER OF PICTURES, NOTICES OR SIMILAR ANNOUNCEMENTS

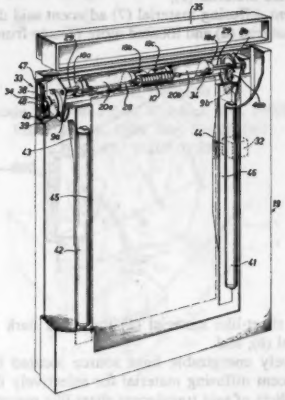
Peter J. T. Törnqvist, Barkassvägen 11, Lidingö, Sweden

Filed Aug. 1, 1978, Ser. No. 929,935

Claims priority, application Sweden, Aug. 9, 1977, 7709028

Int. Cl.³ G09F *11/30*

U.S. Cl. 40—476 **14 Claims**



1. System for displaying and changing the display of a number of pictures, notices, or the like, comprising:

a plurality of flexible sheets (1–7), each provided with pictures, notices, or the like;

suspension means (11–17) coupled to said sheets for suspension of said sheets;

a divided stacker (*8a,8b*) for receiving said suspension means, said stacker including means projecting beyond the sheet on either side thereof, said stacker including means for engaging said suspension means and, in doing so, storing the sheets (1–7), preferably hanging vertically;

feed means (10–18) located adjacent said stacker and adapted to displace or move the sheets (1–7) relative to the associated suspension means;

each end of each sheet being provided with a substantially stiff outer grip (*21a–27a; 21b–27b*), which is adapted to be gripped and moved by said feed means (10–18);

each sheet (1–7) being provided, near its respective ends, with a respective stop means (*21a, 21b,* etc.) to stop the relative displacement of the sheet in relation to the associated suspension means, such displacement being produced by the said feed means (10–18);

each grip member (*21a–27a*) being located farther away from the center of the associated sheet than is the associated stop means; and

said suspension means (11–17) each being relatively displaceable from one stop means (*21a,* etc.) at one end of the respective sheet (1–7) to its second stop means (*21b,* etc.) at the other end of the respective sheet on a display change of the flexible sheet.

4,240,220

REFLECTOR WITH ILLUMINATED INDICIA

Barry Smith, 554 W. 38 St., New York, N.Y. 10018

Filed Apr. 26, 1979, Ser. No. 33,528

Int. Cl.³ G09F *13/08*

U.S. Cl. 40—564 **12 Claims**

1. A reflector having selectively illuminatable indicia which is readable in both its illuminated and non-illuminated states, comprising:

a translucent sheet-like material (1) having front and rear

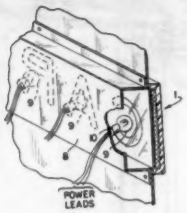
surfaces and reflecting elements (2) on at least a portion of at least one of said front and rear surfaces;

means defining indicia on a rear surface portion of said translucent sheet-like material (1);

reflecting material on said reflecting elements, but not on said indicia defining means;

a dark, translucent, material (6) adjacent the indicia defining means on the rear surface portion of said translucent sheet-like material (1);

translucent diffusing material (7) adjacent said dark translucent material (6) and located more remote from said translucent sheet-like material (1) than said dark translucent material (6); and



a selectively energizable light source located behind said translucent diffusing material for selectively illuminating said indicia of said translucent sheet-like material (1), said indicia appearing dark in color when viewed from the front of said translucent sheet-like material (1) and when not illuminated by said light source, and said indicia appearing substantially the same color as said translucent sheet-like material (1) when viewed from the front of said translucent sheet-like material and when illuminated by said light source.

4,240,221

STRIKE LIGHT FISHING ROD HOLDER

Gene Komarnicki, 2 Gertrude St., St. Albans, Victoria, Australia

Filed Feb. 27, 1979, Ser. No. 15,639
Claims priority, application Australia, Mar. 16, 1978, PD3737
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **6 Claims**

1. A fishing rod support and warning device comprising:

(a) an elongated housing having an inner wall which includes at least one rib aligned along the longitudinal axis of the housing;

(b) a contact rod having an outer end for supporting a fishing rod, and a threaded inner end for closing an electric circuit having a power source and a warning means whenever said fishing rod depresses said outer end of said contact rod;

(c) spring mounting means including a spring for resiliently mounting said threaded inner end of said contact rod within said housing, and

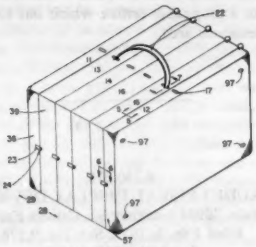
(d) means for altering the degree of said resilience of said spring mounting means including said outer end of said contact rod, a disc having internal threads for threadably engaging said threaded inner end of said contact rod, and a peripheral recess for receiving said housing rib.

4,240,222

TACKLE BOX

Dorris L. Covington, 701 N. Bosart, Indianapolis, Ind. 46201

Filed Dec. 26, 1978, Ser. No. 973,137
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—57.5 R **19 Claims**



1. A tackle box comprising:

a plurality of generally rectangular housing units stacked horizontally,

each of said units having a top and at least one generally straight upstanding hinge side, with hinge means vertically spaced along said side and connected to hinge means on a next adjacent unit, each of said units being thereby hingedly connected to the next adjacent unit,

a carrying handle at the top of at least one of said units,

said hinge means having vertical hinge axes and each of said units having a swing side horizontally spaced from the hinge side, the swing sides of adjacent units being horizontally separable from each other to permit access to interiors of said units while hinge sides thereof remain connected to next adjacent units,

said hinge means being constructed to facilitate intentional disconnection of one of said units from the unit next adjacent to it,

each of said units having a hinge edge meeting a hinge edge of the next adjacent unit,

the hinge means including at least one hinge loop on each hinge edge, each loop having a circular aperture with a loop axis, the hinge loops on meeting hinge edges having their loop axes colinear and vertical, and top headed hinge pins received through the apertures of hinge loops having colinear axes to hingedly connect said loops together, but said pins being readily removable upwardly from said hinge loop apertures, to facilitate connection and disconnection of one of said units to another of said units without tools,

a handle receiver on the top of each of said units,

said handle having a central hand receiver portion and having end portions attachable to any of said receivers and attached to said handle receivers on at least two of said units,

said handle being alterable between said hand receiver portion and said end portions to facilitate spanning greater

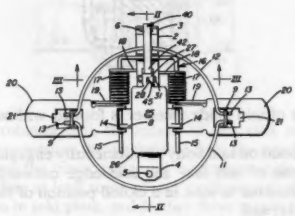
and lesser numbers of units of said plurality of units, intermediate the two units to which said end portions are attached.

4,240,223

ANIMAL TRAP

Edward J. Medvetz, 220 Lincoln St., Homer City, Pa. 15748, and Rudolph M. Yandrick, 267 S. Fourteenth St., Indiana, Pa. 15701

Filed Nov. 15, 1979, Ser. No. 94,379
Int. Cl.[3] A01M *23/26*
U.S. Cl. 43—58 9 Claims



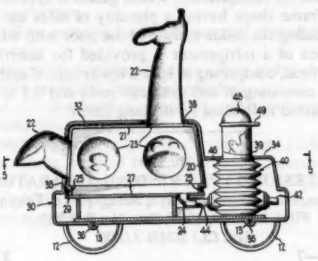
1. In an animal trap having a frame, a pair of jaws rotatably mounted on said frame, spring means on said frame to urge said jaws toward each other from the set position, a pan located between said jaws when said jaws are in the set position, means pivotally mounting said pan on said frame, a dog adapted to contact said pan and hold said jaws in the set position and means pivotally mounting said dog on said frame, the improvement comprising an opening formed in said pan and a corresponding opening formed in said dog aligned with said opening in said pan when said pan and said dog are in contact when the trap is in the set position and a frangible shear pin extending through said openings in said pan and said dog to maintain contact between said pan and said dog, whereby a controlled and adjustable trigger arrangement is provided.

4,240,224

TOY VEHICLE

Allison W. Katzman, Chicago; Burton C. Meyer, Downers Grove; Erick E. Erickson, Chicago, and Palmer J. Schoenfield, Evanston, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,309
Int. Cl.[3] A63H *3/06*
U.S. Cl. 46—88 3 Claims



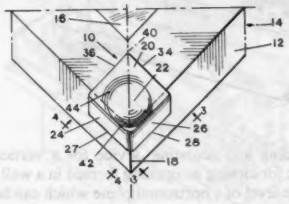
1. A circus truck toy, comprising:
a vehicle frame supported by wheel means for rolling support on a suitable surface;
a rear cargo portion;
a front cab portion;
a plurality of windows in the rear cargo portion;
a flexible pneumatic sack mounted within the cargo portion, said flexible sack having a plurality of protruding portions aligned with the windows to permit the same extend outwardly upon inflation thereof;
means for giving each one of said extended protrusions the shape and appearance of an animal; and
means for pressurizing said sack.

4,240,225

CORNER GUARD

Don M. Sartain, P.O. Box 314, Wabasso, Fla. 32970

Filed Jul. 16, 1979, Ser. No. 57,567
Int. Cl.[3] E05F *7/00*
U.S. Cl. 49—462 3 Claims

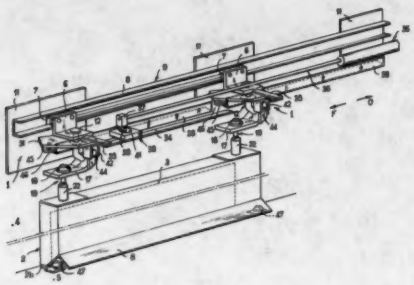


1. A corner guard for use on a window in a wall, in combination with that window, wherein,
the window includes at least one sash having a surrounding frame, the sash is swingable between open and closed positions on an axis adjacent the wall the having a swingable edge spaced from the wall when in open position, and the sash when in closed position lies closely adjacent the plane of the wall with the swinging edge consequently also closely adjacent that plane, the sash having an inner surface and an outer surface relative to its closed position, the frame being of metal or similar hard material having sharp corners which readily cause injury to the body of a person having impact therewith,
the corner guard being an integral article including a base and a boss rising therefrom, the base having a recess in an under side defined on one side by a main surface of the base, and on other sides by downwardly extending flanges on two contiguous sides of the base, the surfaces of the base that define the recess being flat and commonly intersecting and defining a sharp inside corner,
the corner guard being fitted to the outer surface of frame with the main surface of the recess engaging the outer surface of the frame, and the flanges engaging the peripheral edges of the frame, the inner surface of the frame being clear of the corner guard and correspondingly unobstructed,
whereby the sash can be moved to its closed position unimpeded by the corner guard and thereby capable of engaging any element in the window by the inner surface of the sash that it could engage without the corner guard fitted thereto,
said boss extending laterally from the base beyond both of the flanges and the corner therebetween, and the boss and those portions of the flanges at the juncture thereof together extending the full dimension of the guard in direction perpendicular to said main surface, whereby the guard at said juncture is positioned for receiving impact from all directions except in direction against the inner surface,
the material of the corner guard being softer than the metal of the frame.

4,240,226
GUIDING AND ACTUATING DEVICE FOR A SLIDING DOOR

Alexandre Georgelin, Bois Colombes, France, assignor to Faiveley S.A., Saint Ouen, France

Filed Oct. 31, 1978, Ser. No. 956,269
Claims priority, application France, Nov. 8, 1977, 77 33585
Int. Cl.[2] E05D *15/10*
U.S. Cl. 49—223 7 Claims



1. A guiding and actuating device for a vertical air-tight sliding door for closing an opening formed in a wall and terminating at the level of a horizontal plane which can be the floor, comprising suspension means for guiding the door in a direction parallel to the wall and means for applying said door simultaneously against said wall and against said horizontal plane when it is located opposite to the opening aforementioned, the suspension means being constituted by at least two carriages constrained by guiding means to move horizontally along the wall, each carriage being provided with a first shaft coupled by articulation means to a second shaft fixed to the door, and means for locking the articulation means being provided in order to prevent the movement of the second shaft when the door is not located opposite to the opening, wherein both shafts have vertical axes and wherein the articulation means are so arranged that the second shaft is permitted at the time of release of the locking means to carry out a movement having a component parallel to the direction of the common axis of both shafts, the locking means comprising a roller having a vertical axis mounted on a component of the articulation means and applied against a rectilinear roller track which is rigidly fixed to the wall in order to prevent said component from undergoing a rotational displacement accompanied by the second shaft, a gap being formed in the roller track in order to permit release of the roller and unlocking of the device, the first shaft being elbowed and rotatably mounted on a bent plate which is pivotally coupled to the second shaft by means of a ball-joint assembly, the closing movement of the door being carried out by rotation of said bent plate.

4,240,227
WINDOW ASSEMBLY FOR VEHICLES

Franz Hasler; Peter Wätzold, both of Wettstetten, and Steffen Freudenberg, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

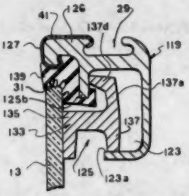
Filed Mar. 6, 1979, Ser. No. 17,833
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809721
Int. Cl.[3] E05F *11/38*
U.S. Cl. 49—348 8 Claims

1. A window assembly for an automotive vehicle having a body, said assembly comprising:

a window pane adapted to be raised from and lowered into said body and having at least one substantially vertical edge;

a respective substantially vertical guide rail mounted on said body and disposed along said edge;

at least one guide member directly fixed to said pane along a face thereof turned toward the interior of the vehicle and disposed inwardly of a respective one of said edges for engagement with and guidance by said rail whereby a continuous zone on said face and along said edge outwardly of said guide member is formed without obstruction;



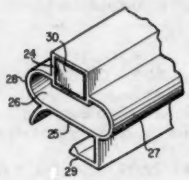
sealing means on said body simultaneously engaging directly said zone of said face and said edge outwardly of said guide member at least in a closed position of the window assembly; and

mechanism on said body for raising and lowering said pane with said guide member guided by said rail.

4,240,228
SEALING APPARATUS FOR REFRIGERATORS AND METHOD OF MANUFACTURE THEREOF

Yasuhiro Okamura, Osaka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1979, Ser. No. 15,915
Claims priority, application Japan, Mar. 2, 1978, 53-23796
Int. Cl.[3] E06B *7/16*
U.S. Cl. 49—478 3 Claims



1. A gasket for refrigerators, which gasket is approximately of picture-frame shape having a plurality of sides and is provided for sealing the inside margin of the door with which the storage space of a refrigerator is provided for insertion and removal of food, comprising at least a lower side of said plurality of sides consisting of soft synthetic resin and 0.2 to 1% by weight of mixed individual reinforcing fibres.

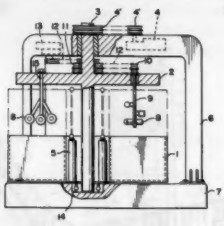
4,240,229
IMMERSION TYPE GRINDING APPARATUS

Ietatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku, Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 964,963
Int. Cl.[3] B24B *31/00*
U.S. Cl. 51—7 3 Claims

1. Grinding apparatus comprising in combination, a grinding tank disposed about a central axis having grinding materials therein and presenting an open mouth for receiving materials to be ground therein, a rotatable main shaft mounted substantially along the central axis of said tank and having a plate integral therewith providing a movable cover plate extending over substantially the entire mouth of said tank, a first drive

means for rotating said shaft and plate at various speeds, a plurality of workpiece shafts adapted to hold workpieces extending from said plate to enter said tank off center about said axis, and means relatively vertically moving said tank and shaft plate with its rotatable shafts to thereby enter workpieces into the grinding materials where the materials slide and flow about the workpieces as the main shaft is rotated at various selected



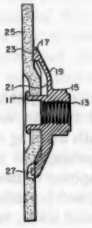
speeds of rotation with the mouth of said tank substantially closed and to remove the workpieces from the grinding materials by lifting the cover plate and workpiece shafts from said tank including at least some of said workpiece shafts mounted for rotation in said plate, and further drive means for continuously rotating said rotatable workpiece shafts at selected speeds independently from the speed of rotation of said main shaft.

4,240,230

THROW-AWAY ADAPTORS FOR GRINDING WHEELS

Salvatore Ferrantini, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 24, 1979, Ser. No. 5,927
Int. Cl.³ B24D *5/16*; B24B *41/04*
U.S. Cl. 51—168 **5 Claims**



1. A unitary adaptor for distributing torque on grinding wheels comprising:

a. a hollow mandrel having an internal threaded portion in one end,

b. a disc portion having a convex face and a concave face axially extending from said mandrel,

c. said concave portion of said disc portion having a flange around the periphery thereof,

d. a plurality of equally spaced protrusions extending from said flange, adapted to be received in corresponding orifices in a grinding wheel, and

e. a plurality of rib members within said concave portion extending from said mandrel to said flange.

4,240,231

RECTILINEAR WORK FINISHING APPARATUS

Lawrence Day, 906 Willow La., Mount Prospect, Ill. 60056

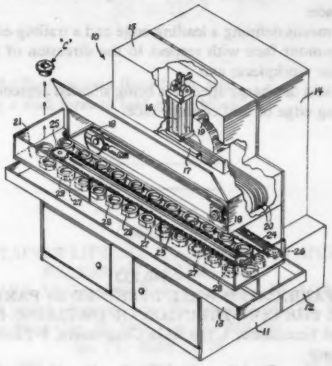
Filed Sep. 5, 1978, Ser. No. 939,361
Int. Cl.³ B24B *5/00, 21/02, 29/00*
U.S. Cl. 51—138 **5 Claims**

1. A work piece finishing apparatus having a deck over which pieces of work to be finished are moved through an elliptical path with a linear section which passes beneath a work piece finishing belt having a continuous rotational movement about a horizontal axis comprising:

(a) a ring-like work piece carrier adapted for movement over the deck through said elliptical path and beneath the workpiece finishing belt,

(b) a work piece carrying vessel mounted on said work piece carrier, means mounting said vessel for independent rotational movement about a vertical axis with respect to said carrier,

(c) a work piece mounting plate carried by and rotatable with said vessel about said vertical axis, means mounting



said plate for independent vertical movement relative to said vessel,

(d) means for moving said work piece carrier and said work piece carrying vessel beneath the work piece finishing belt,

(e) means for rotating said work piece carrying vessel about said vertical axis independent of the movement of said vessel with said work piece carrier through said elliptical path over the deck and beneath the work piece finishing belt, and

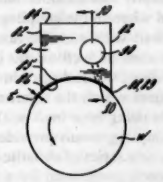
(f) means for elevating said work piece mounting plate above said vessel and into contact with the finishing belt as said vessel and said plate are rotated about said vertical axis and moved with said carrier beneath the finishing belt.

4,240,232

COATED ABRASIVE SUPERFINISHING STONE AND METHOD OF MAKING SAME

John C. Chwae, Appleton, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Dec. 30, 1977, Ser. No. 865,882
Int. Cl.³ B24D *15/02*
U.S. Cl. 51—356 **4 Claims**



1. A superfinishing stone for micro-finish machining of a workpiece and comprising, in combination:

(a) a metallic body of block-like form;

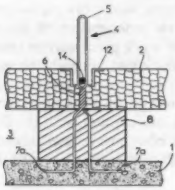
(b) means defining an arcuate contour face in said body, said contour face being substantially complementary to the contour of a workpiece to be superfinished;
(c) means defining a coolant supply passage in said body extending longitudinally of said contour face;
(d) means defining a plurality of unrestricted coolant discharge passages communicating between said coolant supply passage and said contour face;
(e) a coated abrasive liner having an area coextensive with said contour face, said liner having unrestricted apertures therethrough adapted to register with said discharge apertures in said body;
(f) means for adhesively laminating said liner to said contour face;
(g) means defining a leading edge and a trailing-edge on said contour face with respect to the direction of rotation of the workpiece; and
(h) said discharge apertures being situated adjacent the leading edge of said contour face.

4,240,233

PREFABRICATED WALL DESIGNED IN PARTICULAR FOR THE CONSTRUCTION OF DWELLING HOUSES

Michel Vercelletto, 1, rue de la Chauvinière, F-72600 Mamers, France

Filed Apr. 20, 1979, Ser. No. 31,865
Claims priority, application France, Apr. 26, 1978, 78 12295; Sep. 21, 1978, 78 27042
Int. Cl.³ E04G *9/04, 11/06;* E04B *2/28*
U.S. Cl. 52—127 **7 Claims**



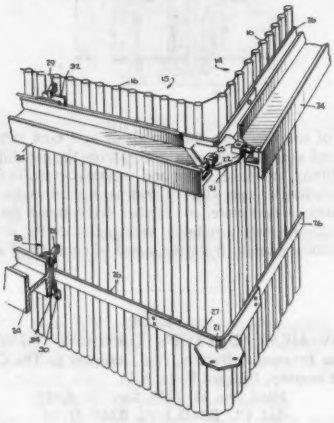
1. A prefabricated wall primarily for the construction of dwelling houses and comprising an insulating inner panel and an outer panel assembled together by coupling means so as to form between said panels an internal space which can subsequently be filled with no-fines or light concrete, wherein the insulating inner panel is provided with superposed horizontal channels fitted with U-section members or flanged channel bars having uniformly spaced slots and flush-mounted within said channels, and wherein the coupling means are provided at the ends of the wall with metallic fastening elements which pass through the slots as well as the insulating material and extend on each side of vertical upright members forming part of end beams against which the internal panel is applied, said fastening elements being bent back within the sectional members whilst the coupling means provided between the ends of said panels comprise a series of metallic fastening pins disposed at intervals and each constituted by a loop, the ends of said loop being twisted and provided with two free end extensions, the fastening pins being positioned in such a manner that the loops of said pins pass through the insulating inner panel whilst the free ends of said pins pass through packing-blocks placed within the internal space and are anchored in the outer panel.

4,240,234

ADJUSTABLE BUCKSTAY SYSTEM FOR VAPOR GENERATORS OR THE LIKE

Frantisek L. Eisinger, Demarest; Harry H. Pratt, West Orange, and Clarence C. Eich, Mountain Lakes, all of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Dec. 20, 1978, Ser. No. 971,274
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—261 **21 Claims**



1. An adjustable buckstay system for controlling vibration in vapor generators and the like which include a plurality of vertically disposed walls defining a chamber for hot gases, said buckstay system comprising:
a buckstay beam disposed transversely adjacent each of said walls and having end portions which extend beyond the ends of the adjacent walls, whereby the end portions of adjacent buckstay beams are juxtaposed at each wall corner defined by adjacent walls of the generator;
spacer assemblies having elements connecting said buckstay beams and respective associated walls in spaced relationship and including means for permitting relative movement between said buckstay beams and respective associated generator walls due to differential thermal expansion between said walls and said beams;
a tension tie disposed transversely adjacent each of said walls between each beam and the associated wall;
corner assembly means having elements connected adjacent buckstay beam end portions to one another and also connecting adjacent tension tie ends to one another and including means for permitting relative movement of adjacent end portions due to thermal expansion of said beams;
at least one of said means for permitting relative movement between said beams and said generator walls, and between said adjacent beam end portions, including means defining a clearance of predetermined magnitude between connecting elements thereof; and
adjustment means for adjusting the magnitude of said clearance.

4,240,235

GLAZED CLOSURE ASSEMBLY

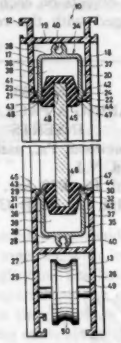
Kooichiro Nawa, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,391

Claims priority, application Japan, May 24, 1978, 53-69021[U]

Int. Cl.³ E04B 1/62

U.S. Cl. 52—397 4 Claims



1. A glazed closure assembly comprising:

(a) a first pair of parallel spaced frame members made of synthetic resin and having a first pair of slots, respectively, facing toward each other;

(b) a second pair of parallel spaced frame members, perpendicular to said first pair, made of synthetic resin and having a second pair of slots, respectively, facing toward each other;

(c) a pair of parallel spaced attachments made of metal and mounted respectively in said first pair of slots, said attachments having a third pair of slots, respectively, facing toward each other and a pair of fastener-receiving means, respectively, remote from said third pair of slots and opening at the ends of said attachments which confront said second frame members;

(d) gasket means disposed in said third pair of slots and said second pair of slots;

(e) a pane of glass having its marginal edges supported by said gasket extending therearound; and

(f) fastener means extending through said second frame members threadedly into said fastener-receiving means, whereby said attachments are connected endwise to said second pair of parallel spaced frame members.

4,240,236

PROCESS FOR SETTING UP THE SHUTTERING FOR A BUILDING WALL, AND SETTING BLOCK TO BE USED IN THIS PROCESS

Adrianus Molenaar, Goes, Netherlands, assignor to Molenaar's Betonindustrie B.V., Netherlands

Filed Aug. 9, 1978, Ser. No. 932,101

Claims priority, application Netherlands, Aug. 9, 1977, 7708770

Int. Cl.² E04G 11/20

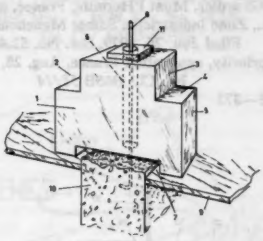
U.S. Cl. 52—741 6 Claims

1. A method of accurately setting up a form for a wall of a storied building comprising the steps of

casting an upwards protruding locating rod in an underlying wall,

placing a floor form relative to said underlying wall,

fixing a guide block with a vertical bore on said floor form and around said rod,



casting the floor on said floor form, and

attaching a wall form to said guide block.

4,240,237

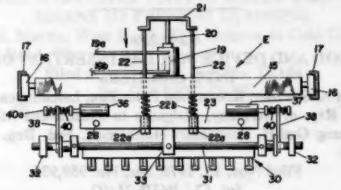
CONTAINER LIFTING, TRANSPORTING AND RELEASING APPARATUS

Frank P. Alduk, McGary Rd., New Wilmington, Pa. 16142, and Dennis F. Alduk, Sunset Valley Rd., New Castle, Pa. 16105

Filed Oct. 30, 1978, Ser. No. 955,893

Int. Cl.³ B65B 21/18

U.S. Cl. 53—247 13 Claims



1. In an apparatus for lifting, transporting and depositing empty bottles and like hollow articles, the invention comprises:

(a) a pair of only two flat strips confined against each other in slidable face-to-face relation;

(b) supporting means on which the ends of the strips are engaged arranged to effect simultaneous sliding movement of both strips toward and away from a central position with the strips of the pair having their confronting faces in a vertical plane;

(c) the strips each having several depending equally spaced coplanar fingers thereon with one finger for each article in a row of articles to be lifted and transferred to another location, a finger on each strip forming with a cooperating finger on the other strip a pair of such fingers, the fingers of each pair being movable with their respective strips in parallel planes in such manner that, with small bottles, the fingers of each pair may be moved into and out of overlapping relation with the movement of their respective strips;

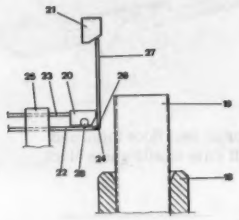
(d) each finger of each pair having a lug projecting therefrom in the direction of the plane of movement of the strip on which it is carried so that they move toward and away from each other with the relative sliding movement of the strips;

(e) the combined thickness of the strips in a plane transverse to the length of the strips being less than the width of the fingers in the plane of sliding movement of the strips.

4,240,238
GRIPPING MEANS FOR MACHINE FOR FILLING AND CLOSING FLEXIBLE TUBES

Raymond Girardier, Mont l'Hermite, France, assignor to Cotuplas S.A., Zone industrielle, Sainte Menehould, France

Filed Jun. 26, 1979, Ser. No. 52,430
Claims priority, application France, Aug. 25, 1978, 78 25438
Int. Cl.[3] B65B *51/14*
U.S. Cl. 53—373 5 Claims

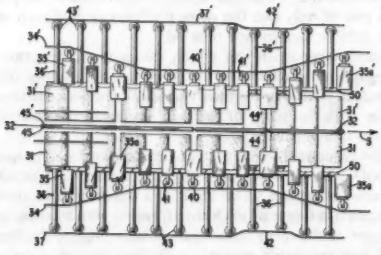


1. For use in a packaging machine, double-jaw gripping means comprising first and second jaws, control means for causing relative movement of said jaws in a common plane between an open and a closed position, means for selectively raising said first jaw relative to said second jaw and out of said common plane of the jaws, and means restricting the raising of said first jaw except in the open position of the jaws, said control means for causing relative movement of the jaws includes an elongated control member having a romote end mounting said first jaw, said means for selectively raising said first jaw including a hinged joint in said control member inward of the jaw mounting remote end.

4,240,239
METHOD AND DEVICE FOR THE INSERTION OF CANS INTO CARRIERS

Herbert A. Stelzner, Kaarst, and Peter Lau, Leichlingen, both of Fed. Rep. of Germany, assignors to Plastik-und Metallverpackung GmbH, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,936
Int. Cl.[3] B65B *21/00*
U.S. Cl. 53—398 10 Claims

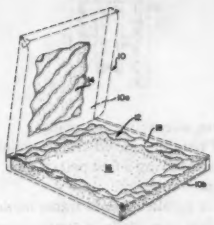


1. A method of packaging a plurality of objects having a protuberant beaded-rim into a plurality of discrete planar carriers, each having an array of bead-engaging formations disposed on opposite sides of the plane of said carrier, each bead-engaging formation comprising a resilient socket adapted to engage the protuberant beaded-rim of said objects, said method comprising the steps of sequentially grouping the objects into two packaging groups arranged identially to said array of bead-engaging formations disposed on opposite sides of the plane of said carrier; positioning said packaging groups in an insert direction with said array of bead-engaging formations of one of said discrete carriers; aligning said objects in each of said packaging groups with respect to said bead-engaging formations by inserting lateral cores between the objects of each of said packaging groups; and individually displacing the objects in each of said groups in said insertion direction on each side of said carrier toward and into engagement of said protuberant beaded-rim with the respective bead-engaging disposed on opposite sides of the plane formation of said carrier while laterally buttressing and guiding said objects by said cores, whereby said objects on each side of said carrier are simultaneously engaged with the respective bead-engaging formations.

4,240,240
METHOD OF MAKING A PACKAGE HAVING FOAM INSERTS

Joel B. Cohen, Wynnewood, Pa., assignor to Shell Container Systems, Springfield, N.J.

Filed Jul. 16, 1979, Ser. No. 57,910
Int. Cl.[3] B65B *43/00*
U.S. Cl. 53—410 11 Claims



1. A method of making a package having first and second foam cushion inserts, comprising the steps of:

providing a package having relatively movable first and second sections, said first and second sections being movable towards and away from a closed position;

forming convolutions in at least one surface of a piece of foam material;

removing a section of foam material from said piece of foam material to form a cutout area in said piece of foam material for receiving an article, said piece of foam material with said cutout area therein defining a first foam insert and said removed section of foam material defining a second foam insert; and

applying said first and second foam inserts to said first and second sections of said package, respectively, so that said cutout area faces said second foam insert and is in alignment therewith when said first and second sections are in said closed position, whereby an article placed in said cutout area is cushioned between said first and second foam inserts when said first and second sections of said package are in said closed position.

4,240,241
METHOD AND APPARATUS FOR MAKING A RECLOSABLE PACKAGE

Philip A. Sanborn, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

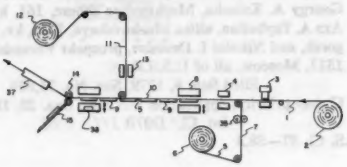
Filed Aug. 9, 1979, Ser. No. 65,300
Int. Cl.[3] B65B *61/18, 31/02*
U.S. Cl. 53—412 12 Claims

1. A method for making a reclosable package from thermoplastic materials comprising the steps of:

(a) providing a formable web, a covering web, and a closure strip;

(b) indenting a portion of said closure strip at intervals spaced apart by approximately the desired length of the package;

(c) advancing the forming web and closure strip towards each other;
(d) sealing the lower surface of the closure strip to the forming web longitudinally in the direction of travel of the forming web;
(e) forming a cavity with a peripheral flange in said forming web so that said closure strip remains on a portion of said peripheral flange;
(f) placing a product in said cavity;
(g) covering said product with said covering web;



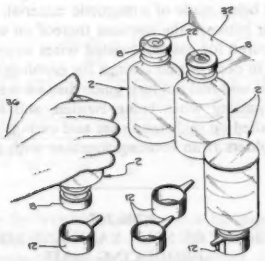
(h) evacuating the space between said webs;
(i) sealing the webs together with longitudinal and transverse seals, one longitudinal seal being adjacent and parallel to but spaced apart from the closure strip with the closure strip within the periphery of the seals, and the transverse seals being made across the closure strip where a portion of the strip had been indented; and
(j) sealing the upper surface of the closure strip to the covering web.

4,240,242

STERILE CAPPING METHOD FOR A PLURALITY OF I.V. BOTTLES

James J. Sullivan, 1349 N. Foothill Rd., Ojai, Calif. 93023, and Charles M. Grey, 1518 Conestoga Ct., Redlands, Calif. 92373

Filed Jun. 18, 1979, Ser. No. 49,931
Int. Cl.³ B65B *7/28*; B67B *3/22*
U.S. Cl. 53—471 **10 Claims**



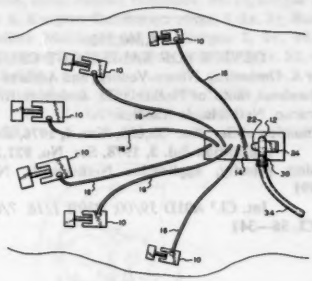
1. The method of preparing a plurality of IV bottles for administration to a patient, comprising the steps of:
sterile packaging a plurality of press-fit type, disposable I.V. bottle caps in a unitary package,
providing a working environment with a working floor,
adding desired amounts of dilutant to a plurality of I.V. bottles within said working environment,
opening the bottle cap package within said working environment and distributing the caps therein in upward facing positions on said working floor, and
sequentially pressing each of said IV bottles into a corresponding bottle cap until the caps are press-fit into sterile sealing relationship on their respective bottles.

4,240,243

INTAKE BALANCING AND SATELLITE COLLECTOR SYSTEM

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Filed Mar. 7, 1979, Ser. No. 18,136
Int. Cl.³ A01D *44/00*
U.S. Cl. 56—8 **1 Claim**



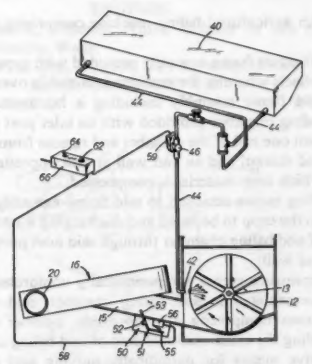
1. A method of harvesting and transporting underwater products and material including aquatic growths in the form of a slurry comprising the steps of forming a slurry at a plurality of satellite pumping stations with the products and materials being harvested, pumping the slurry of said stations to a common transfer pumping station, and sensing the flow rate of said transfer station to balance the intake of said transfer station by dilution of the slurry at the transfer station.

4,240,244

FORAGE HARVESTER HAVING WATER INJECTION MEANS TO PREVENT GUMMING

Virgil B. Martin, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Sep. 12, 1979, Ser. No. 75,144
Int. Cl.³ B02C *18/22*
U.S. Cl. 56—16.4 **7 Claims**



1. A mobile forage harvester having means for harvesting crop material from the ground, means for chopping and blowing chopped material, and a water supply system for periodically injecting a controllable amount of water into a stream of chopped crop material as the latter passes through said harvester to thereby minimize gumming up of said material in said harvester, said system including, a source of water carried by said harvester, a discharge means for discharging water into said stream of crop material, conduit means connected between and for conducting water from said source to said discharge means, a water shut-off valve in said conduit means and

shiftable between water flow and water shut-off positions, shiftable crop flow sensing means positionable in the path of said stream of crop material and connected with said valve, said sensing means being operative by the flow of said stream of crop material to shift said shut-off valve to said water flow position to thereby cause water to be discharged into said stream of crop material.

4,240,245
DEVICE FOR BALING CUT CROPS

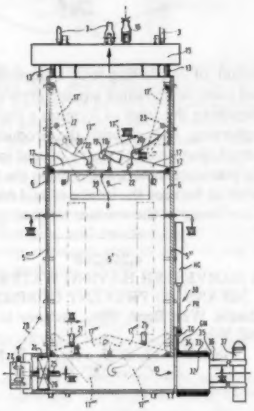
Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 738,683, Nov. 4, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,218

Claims priority, application Netherlands, Nov. 5, 1975, 7512991

Int. Cl.³ A01D *39/00*; B30B *1/18, 7/04*

U.S. Cl. 56—341 **14 Claims**



1. An agricultural baling machine comprising, in combination:

an elongate frame assembly provided with ground-engaging wheels whereby the machine is movable over the ground, said frame assembly including a horizontally elongate baling chamber provided with an inlet port closely adjacent one end of the chamber and remote from the opposite end thereof and an end wall at said opposite end against which crop material is compressed;

loading means attached to said frame assembly for picking up the crop to be baled and discharging it into the interior of said baling chamber through said inlet port toward said end wall;

compressing means for periodically compressing the crop accumulated in said baling chamber, said compressing means comprising a compression member substantially filling the cross-sectional area of said baling chamber, and drive means for periodically moving said compression member in piston-like fashion between a normal position at said one end of the baling chamber and clearing said inlet port to that side remote fron said end wall and an extended position also clearing and leaving open said inlet port but to the opposite side thereof in closely spaced relation from said end wall whereby to form a compressed bale between said compression member and said end wall; and

means for discharging said compressed bale from said chamber while said compression member is in said extended position.

4,240,246
WIRE STRANDING MACHINE

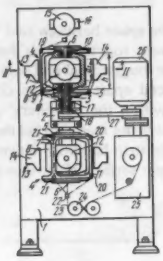
Viktor F. Groza, ulitsa Darvina, 7, kv. 12; Jury N. Sharapov, ulitsa Akademika Pavlova, 148a, kv. 16; Nikolai P. Shtykh, ulitsa 3 Internatsionala, 17, kv. 56, all of Kharkov; Khristofor S. Shakhpazov, prospekt Mira, 188, kv. 30, Moscow; Ivan N. Nedovizy, ulitsa Moskovskaya, 37, kv. 49, Magnitogorsk; Sergei F. Korovainy, ulitsa Vokzalnaya, 70, kv. 50; Valentin D. Judin, ulitsa Vokzalnaya, 72, kv. 50, both of Khartsyzsk; Nikolai P. Chernenko, ulitsa Pushkinskaya, 18, kv. 4, Orel; Vitaly S. Starchenko, Moskovskoe shosse, 157, kv. 12, Orel; Georgy A. Kalosha, Moskovskoe shosse, 161, kv. 118, Orel; Aza A. Tsybulina, ulitsa Moskovskaya, 121a, kv. 28, Magnitogorsk, and Nikolai I. Drozdov, prospekt Vernadskogo, 82, kv. 1517, Moscow, all of U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 71,856

Claims priority, application U.S.S.R., Sep. 20, 1978, 2660351

Int. Cl.³ D07B *3/12, 7/02*

U.S. Cl. 57—58.3 **2 Claims**



1. A wire stranding machine for the manufacture of metal cord strands or steel ropes from wire wound on reels comprising: a stand, a rotor vertically installed on said stand in the form of a shaft; a bearing support disposed on said stand; said rotor being installed in said bearing support about its middle portion so that the ends thereof project from said bearing support; casings secured on the ends of said rotor; bearing supports installed in said casings; reel holders adapted for holding reels being mounted in said bearing supports of said casings and being made of a magnetic material; through ducts in said rotor between the portions thereof on which said casings are secured for passing twisted wires unwound from the reels; ports in each of said casings for enabling the reels to be installed into said reel holders; guide dies secured on each said casing for passing wires being twisted; and electromagnets fixedly installed on said stand near said casings for restraining said reel holders from rotating together with said rotor and casings.

4,240,247
SPLICED JOINT OF SPUN YARN AND METHOD FOR PRODUCING SAME

Isamu Matsui; Shigeru Takasaki, both of Kyotoshi, and Hiroshi Mima, Joyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Dec. 26, 1978, Ser. No. 973,176

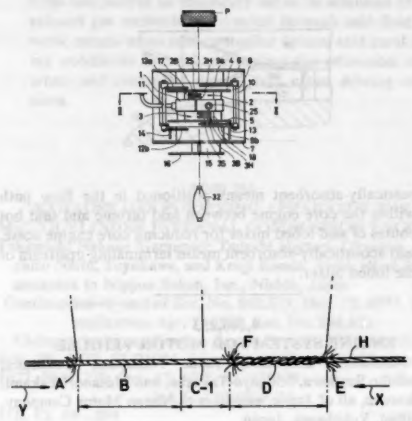
Claims priority, application Japan, Dec. 28, 1977, 52-158392; Jan. 7, 1978, 53-678; Feb. 1, 1978, 53-10776

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—202 **10 Claims**

1. A yarn splicing method using an air nozzle knotter, characterized in that two spun yarns of which one end is introduced into a yarn inserting hole of the air nozzle knotter from one end thereof and another end is introduced into the hole from the other end thereof are arranged, and then at least one of said spun yarns is slightly slackened prior to or simultaneously with jetting of air into the spun yarns by moving a yarn

presser for pressing the yarn into the yarn inserting hole and wherein the each end of the spun yarn is held at both sides of



the air nozzle knotter respectively before applying jetting of air to the spun yarns.

4,240,248

DEVICES FOR TEXTURING YARNS BY IMPARTING FALSE TWIST BY FRICTION

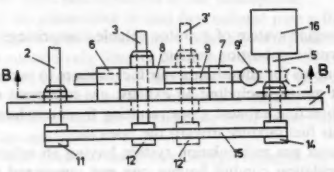
Josef Raschle, Butschwil, Switzerland, assignor to Heberlein Maschinenfabrik AG, Watwil, Switzerland

Filed Sep. 27, 1979, Ser. No. 79,367

Claims priority, application Switzerland, Sep. 27, 1978, 10064/78; Jul. 4, 1979, 6275/79

Int. Cl.³ D02G *1/04*

U.S. Cl. 57—338 **8 Claims**



1. A device for texturing textile yarns by imparting false twist by friction, comprising three parallel shafts for carrying rotationally symmetric elements between which, in operation, a yarn can be run to be false-twisted, said shafts being located at the corners of an equilateral triangle in their operative positions, at least one of said shafts being shiftably mounted for movement between its operative position and a threading-up position in which it is located relatively away from at least one of the other shafts, at least one further shaft arranged in relation to said three shafts such that the centers of all shafts, if connected by a line, would form corners of a closed figure of at least four sides, two sides of which are sides of said equilateral triangle, means coupling said shiftably mounted shaft with another of the shafts for conjoint movement such that any changes in the circumferential length of said closed figure tended to be caused by movement of said shiftably mounted shaft are substantially compensated by conjoint movement of the coupled shafts, each of said shafts being provided with a whorl, and a substantially in-elastic endless belt drivingly linking the whorls of all shafts.

4,240,249

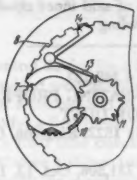
INSTANTANEOUS CALENDAR DEVICE FOR TIMEPIECES

Daniel D. Malkin, ulitsa Junykh Lenintsev, 95/13, korpus 1, kv. 31; Gennady A. Kruglov, Baltiiskaya ulitsa, 4, kv. 21; Boris A. Peredkov, ulitsa Moldagulovoi, 16, korpus 2, kv. 19, and Evgeny V. Kulikov, Maly Koptevsky proezd, 6, kv. 51, all of Moscow, U.S.S.R.

Filed Mar. 5, 1979, Ser. No. 17,688

Int. Cl.² G04B *19/24, 19/02*

U.S. Cl. 368—28 **8 Claims**



1. An instantaneous calendar device for timepieces, comprising: a date ring with a toothed rim; a day disk; a storage of mechanical energy coupled with a gear train and having a driven disk with a projection for transferring said date ring; a seven-position Maltese mechanism interconnecting said storage and said day disk and including a Maltese cross rigidly coupled to, and in coaxial relationship with, said day disk, locking surfaces of the Maltese cross closing on the side surface of said driven disk; a pin for transferring the Maltese cross set on the periphery of an intermediate gear of the storage; and a lever lock of the date ring cooperating with the toothed rim of the date ring.

4,240,250

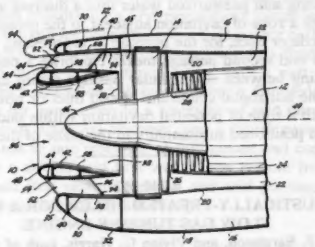
NOISE REDUCING AIR INLET FOR GAS TURBINE ENGINES

Alfred W. Harris, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1977, Ser. No. 864,665

Int. Cl.³ F02C *7/045, 7/047*

U.S. Cl. 60—39.09 D **6 Claims**



1. A noise suppressing air inlet for use in combination with a gas turbine engine that is encased in a housing and includes a compressor stage, said air inlet comprising:

a generally tubular outer cowling for forming a forward end of said engine housing and having an annular leading edge, said outer cowling having an inner wall and an outer wall with said inner wall defining an airflow duct for directing airflow to said compressor stage, at least a portion of said inner wall a sound absorbing surface;

a generally tubular inner cowling having an annular leading

edge, an inner wall and an outer wall, said inner cowling coaxially mounted at a fixed position within said outer cowling, said inner cowling having an annular leading edge positioned forwardly of said annular leading edge of said outer cowling, at least a portion of said inner and outer walls of said inner cowling having a sound absorbing surface, said inner cowling partitioning said airflow duct into an inner airflow channel defined by said inner wall of said inner cowling and an annular outer airflow channel defined between said outer wall of said inner cowling and said inner wall of said outer cowling, said inner and outer airflow channels extending substantially over the entire axial length of said air inlet; and,

a plurality of struts for mounting said inner cowling within said outer cowling, said struts being circumferentially spaced apart from one another and extending radially from said outer wall of said inner cowling to said inner wall of said outer cowling.

4,240,251

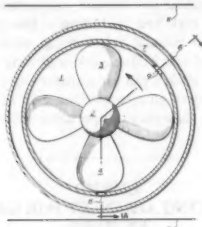
CAVITATION COMPENSATING PROPELLER NOZZLE OR DUCT

Ronald G. Fuller, P.O. Box 1522, Kingston, Ontario K7L 5C7, Canada

Continuation of Ser. No. 731,506, Oct. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 493,753, Aug. 1, 1974, Pat. No. 3,999,884. This application May 25, 1978, Ser. No. 909,529

Int. Cl.[3] **B63H** *11/00, 1/18*

U.S. Cl. 60—221 **3 Claims**



1. A marine propulsion system comprising a nozzle or duct, at least one propeller rotatably mounted on an axis within said nozzle or duct, walls forming a closed annular passage means within the nozzle or duct, means to pressurize water entrained in the annular passage means and a second passage means for introducing said pressurized water into a discrete area coincident with a zone of cavitation adjacent to the propeller within said nozzle or duct, for the purpose of suppressing cavitation, wherein said second passage means comprise a passage communicating between said annular passage means and an area above the horizontal centerline of said duct or nozzle coincident with a zone of potential cavitation within said nozzle or duct and positioned substantially in the plane of the propeller.

4,240,252

ACOUSTICALLY-TREATED MIXER FOR A MIXED FLOW GAS TURBINE ENGINE

Donald F. Sargisson, and Vivian G. Harris, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.

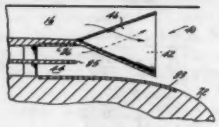
Continuation of Ser. No. 646,325, Jan. 2, 1976, abandoned. This application Jan. 19, 1978, Ser. No. 870,709

Int. Cl.[2] **F02K** *3/04, 1/26;* **B64D** *33/06*

U.S. Cl. 60—262 **6 Claims**

1. In a turbofan engine including an outer nacelle spaced apart from a core engine having a turbine to define an annular bypass duct therebetween, a noise reducing arrangement comprising in combination:

a lobed mixer comprising a plurality of circumferentially-spaced, alternating, convoluted cold chutes in flow communication with the bypass duct and hot chutes in flow communication with the core engine said mixer adapted to mix air flowing in said bypass duct with hot gases flowing in said core engine; and



acoustically-absorbent means positioned in the flow path within the core engine between said turbine and said hot chutes of said lobed mixer for reducing core engine noise, said acoustically-absorbent means terminating upstream of the lobed mixer.

4,240,253

ENGINE SYSTEM FOR MOTOR VEHICLE

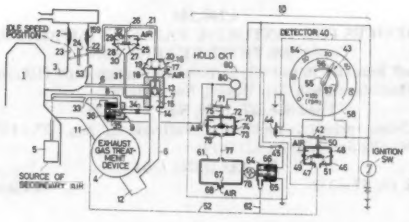
Ken Nakamura, Kawasaki; Yasuo Nakajima, Yokosuka; Kunihiko Sugihara, Ichigaya-Takasho, and Masanori Takami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 19, 1977, Ser. No. 861,663

Claims priority, application Japan, Dec. 20, 1976, 51/153173; Dec. 21, 1976, 51/153590; Dec. 22, 1976, 51/155328

Int. Cl.[3] **F02M** *23/08;* **F01N** *3/10*

U.S. Cl. 60—278 **33 Claims**



1. An engine system of a motor vehicle comprising:

an internal combustion engine;

intake means for admitting an air fuel mixture to said engine;

exhaust means, including an exhaust gas treatment device, for directing exhaust gases resulting from combustion of the air fuel mixture toward the open air;

an exhaust gas recirculation system having an exhaust gas recirculation conduit having one end connected to said exhaust means and the other end connected to said intake means for permitting a portion of the exhaust gases to pass therethrough toward said intake means to mix with the air fuel mixture, said exhaust gas recirculation system having an exhaust gas recirculation valve means for controllably passing a flow of fluid passing through said exhaust gas recirculation conduit;

a controller including detector means responsive to driving conditions of the vehicle which occur when the vehicle is driven in urban areas to produce a first output signal, and responsive to driving conditions which occur when the vehicle is driven in rural areas to produce a second output signal, said controller including means for maintaining said first and second output signals, respectively, for a given period after cessation of the conditions which induced same;

a source of secondary air;

fluid network means interconnecting said source of secondary air, an upstream section of said exhaust gas recircula-

tion conduit of said exhaust gas recirculation valve, and said exhaust means at a position upstream of said exhaust gas treatment device;

air injection control means for permitting a portion of air from said source of secondary air to be admitted to said exhaust gas recirculation conduit through said fluid network means when said controller detects said rural driving conditions and for preventing the admission of air when said controller detects said urban driving conditions.

4,240,254

EXHAUST GAS PURIFYING APPARATUS FOR MULTICYLINDER INTERNAL COMBUSTION ENGINES

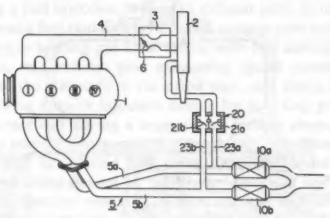
Takamichi Nakase, Gamagori; Tadashi Hattori, Okazaki; Junichiro Naito, Toyokawa, and Kenji Kondo, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 863,579, Dec. 22, 1977. This application Apr. 7, 1978, Ser. No. 894,432

Claims priority, application Japan, Dec. 26, 1976, 51/157284; Feb. 28, 1977, 52/21084; Mar. 18, 1977, 52/30855; Apr. 11, 1977, 52/41235; Oct. 12, 1977, 52/122000

Int. Cl.³ F01N *3/15*

U.S. Cl. 60—293 **1 Claim**



1. An exhaust gas purifying apparatus for a multi-cylinder internal combustion engine, comprising:

first and second exhaust pipes disposed to discharge burned gases from said cylinders to the atmosphere;

means for connecting to said first exhaust pipe a first set of cylinders which comprise a plurality of cylinders which are successively fired in the firing order of the engine;

means for connecting to said second exhaust pipe a second set of cylinders which comprise a further plurality of cylinders which are successively fired in the firing order of the engine;

a first and a second three-way catalyst respectively disposed in said first and second exhaust pipes to purify exhaust gases;

first and second secondary air supply lines respectively opening to said first and second exhaust pipes upstream of said three-way catalysts therein to supply secondary air thereto; and

first and second on-off means respectively disposed in said first and second supply lines to open and close the same for switching on and off the supply of secondary air to said first and second exhaust pipes, said first and second on-off means comprising air suction valves having reed valve members which are operable independently of each other in response to respective pulsations of the exhaust gas flow in said first and second exhaust pipes, caused respectively by successive combustions in said first and second sets of cylinders, to thereby supply the secondary air in a pulse-like manner and cause the air-fuel ratio of exhaust gases therein to vary above and below a stoichiometric air-fuel ratio.

4,240,255

INTEGRATED CONTROL DEVICE FOR A FLUID CIRCUIT AND APPLICATIONS THEREOF

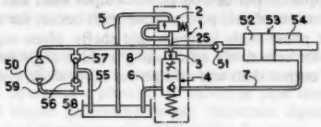
Jacques Benilan, Paris, France, assignor to Les Applications Hydrauliques R. Sarrazin S.A., Fontenay sous Bois, France

Filed May 31, 1979, Ser. No. 44,156

Claims priority, application France, Jun. 1, 1978, 78 16390

Int. Cl.³ F15B *13/042, 21/04*

U.S. Cl. 60—453 **18 Claims**



1. Integrated control device for a fluid circuit, comprising a body which is provided with passage means for incorporating the device in such a circuit, and defining a cavity extending throughout the body, a first pressure limiting stage, a second stage comprising a fluid flow check and retarding valve and means disposed between said two stages for piloting the check and retarding valve by the pressure established by the limiting stage, said first stage comprising first wall means mounted in the cavity and defining a first orifice and a first valve seat surrounding the first orifice, a first closure member movably mounted relative to the body and cooperative with the valve seat, and resiliently yieldable means biasing the first closure member against the first valve seat, said second stage comprising second wall means mounted in the cavity and defining a second orifice and a second valve seat surrounding the second orifice, a second closure member disposed in a part of said cavity and movable relative to the body and cooperative with the second valve seat, and elastically yieldable means biasing the second closure member against the second valve seat, said piloting means comprising means defining a chamber in said cavity which chamber has one end defined by said first wall means, a piloting piston slidably mounted in said chamber and having an end wall which is in direct confronting relation to said first orifice, elastically yieldable means biasing the piloting piston toward said first orifice, means maintaining the piloting piston spaced away from said first wall means and thereby providing a space in said cavity between said first wall means and the piloting piston, and rigid means combined with the piloting piston for enabling the piloting piston to urge the second closure member away from the second seat as the piloting piston moves away from said first wall means, said passage means comprising a first passageway communicating with said space and for connecting to a fluid supply part of said circuit, a second passageway for connection to a fluid return part of said circuit and communicating with a part of said cavity in which said second closure member is disposed, a third passageway for connection to a reservoir of said circuit and communicating with said chamber, and a fourth passageway for connection to said reservoir of said circuit and communicating with a side of said first wall means remote from said chamber, said first closure member and said piloting piston being in coaxial relation in said cavity.

4,240,256

PHASE-ANGLE CONTROLLER FOR STIRLING ENGINES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Allan R. McDougal, La Crescenta, Calif.

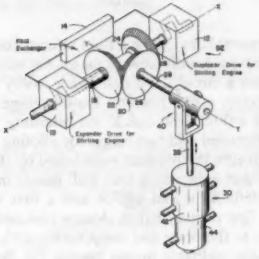
Filed Jan. 31, 1979, Ser. No. 8,208

Int. Cl.³ F02G *1/06*

U.S. Cl. 60—518 **19 Claims**

6. In combination with a phase-angle controller having a pair of coaxially aligned bevel gears, one bevel gear of said pair

being mounted on a variably torqued power output shaft for an expander portion of a Stirling engine, while the other bevel gear of the pair is mounted on a power input shaft, for a displacer portion of the Stirling engine, characterized by variable torque requirements, and a force transfer gear meshed with said pair of bevel gears, said force transfer gear being supported for reversible planetary travel by a carrier arm mounted at one end for pivotal displacement about an axis coincident with the axis of said pair of bevel gears in response to changes in reactive forces applied thereto as simultaneous changes in the torque output of said power output shaft and the torque requirements of said power input shaft occur, for thus changing the phase-angle between said shafts, phase-angle control means for selectively establishing a phase-angle between said power output shaft and said power input shaft, comprising:



A. a restraint link supported for rectilinear displacement and having one end thereof connected to said carrier arm in spaced relation with said one end of the carrier arms for restraining said force transfer gear from planetary travel; and

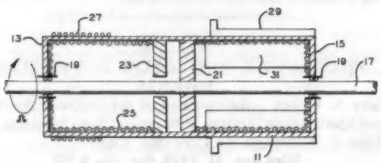
B. hydraulic control means connected with said restraint link including a double-acting piston head rigidly affixed to said link, housing means supporting said piston head for reciprocating displacement, said piston head being so arranged as to establish within the housing means a pair of coaxially aligned, variably dimensioned pressure chambers, an hydraulic fluid substantially filling each of said pressure chambers, and selectively operable pressure release means connected with each of said chambers for relieving pressure developed therewithin for releasing said restraint link for displacement in response to reactive forces applied to the link through said arm.

4,240,257

HEAT PIPE TURBO GENERATOR

Edward L. Rakowsky, Kinnelon, and Lawrence S. Galowin, Upper Saddle River, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 22, 1973, Ser. No. 334,901
Int. Cl.[3] F01K *11/02*
U.S. Cl. 60—531 **16 Claims**



1. A heat pipe turbine comprising:

(a) closed container of generally cylindrical shape having its inside coated with a wick material, said wick material being saturated with a substance which is a liquid at the operating temperature of the turbine;

(b) means at one end of said container to supply heat thereto to vaporize said liquid;

(c) means at the other end of said container to condense the vaporized liquid;

(d) a shaft rotatable within said container with its axis coincident with that of said container;

(e) a turbine rotor affixed to said shaft essentially at the longitudinal center of said container;

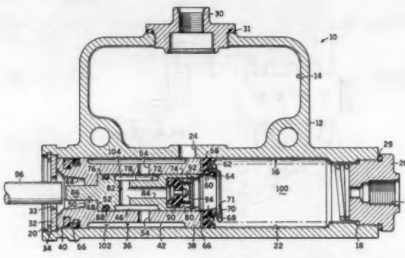
(f) a turbine stator affixed to said container on the side of said rotor nearest said first end and positioned to cooperate with said rotor to provide a turbine action whereby said vaporized liquid will pass through said turbine stator and rotor imparting relative rotation there between.

4,240,258

NON-CUP CUTTING MASTER CYLINDER

Richard W. Angert, St. Louis, and Stephen G. Palmer, Webster Groves, both of Mo., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Nov. 7, 1978, Ser. No. 958,380
Int. Cl.[3] B60T *11/28*
U.S. Cl. 60—589 **3 Claims**



1. A master cylinder comprising:

(a) a housing having an inner wall defining a cavity therein;

(b) a fluid reservoir;

(c) a fluid chamber in said cavity;

(d) a first piston movable in said cavity for increasing the fluid pressure in said fluid chamber, said first piston including a central bore therein and a socket at the rearward end thereof, said central bore and said socket each having an annular shoulder therein;

(e) a fluid path between said fluid reservoir and said fluid chamber extending through said first piston;

(f) a sealing member engaging the housing inner wall over positioned adjacent the forward end of said first piston for movement therewith;

(g) a second piston movable in said central bore in said first piston, said second piston including an extension extending into said first piston socket;

(h) said second piston being sealingly disengaged from said sealing member to open said fluid path and said second piston being in contact with the annular shoulder in said first piston central bore when said first and second pistons are in their fully released positions;

(i) said second piston being sealingly engaged with said sealing member to close said fluid path when said first piston is being moved forward in said cavity to increase the fluid pressure in said fluid chamber; and

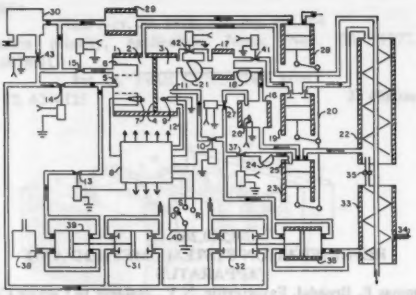
(j) a push rod being in contact with said second piston extension and with the annular shoulder in said first piston socket in order to move said first and second pistons forward in said cavity.

4,240,259

BOILER STEAM ENGINE WITH STEAM RECOVERY AND RECOMPRESSION

Ogden W. Vincent, 2166 La Miel Way, Campbell, Calif. 95008

Filed Feb. 15, 1979, Ser. No. 12,558
Int. Cl.³ F01K *1/08*
U.S. Cl. 60—670 **12 Claims**



1. A steam engine comprising:

a boiler means having a combustion chamber and having a pressurized steam chamber, said combustion chamber having a fuel injection device, an exhaust port, an oxygen port, and a fuel ignition device, said oxygen port injecting on oxygen bearing gas to be mixed with fuel during combustion, said exhaust port exhausting spend combustion gases to the atmosphere via a first pipe, said steam chamber having a water injection device for injecting pressurized water and having a temperature sensing element, an output port of said steam chamber being connected to a transducer by a second pipe, steam and water in said steam chamber being heated by combustion gases in said combustion chamber via at least one wall of said boiler, a steam port of said steam chamber being connected to the mixing port of a steam mixing means by a third pipe and valves,

said steam mixing means being a pressurized vessel with a mixing port, an output port and an input port which is connected to the output port of a steam accumulator means via a fourth pipe and valve, said mixing means mixing stem from said steam chamber with preinjected steam from said steam accumulator means,

a work means having an input that is connected to the output port of said mixing means by a fifth pipe valve, said work means doing work by steam expansion, thereby transmitting work via a drive shaft, the output of said work means exhausting steam to the input port of a steam reservoir via a sixth pipe,

said steam reservoir having a input port, an output port, and a drain port,

a steam compressor means having an output and having an input that is connected to the output port of said steam reservoir, said compressor means having a water injection device for the injection of pressurized water during compression, said steam compressor means receiving motivation energy from said work means,

said pressurized steam accumulator means having an output port and an input port that is connected to the output of said steam compressor means,

an air compressor means having an input connected to the atmosphere and an output connected to an air accumulator, said air compressor means receiving motivation energy from said work means, the output of said air accumulator being connected to an air reservoir and to said oxygen port via a seventh pipe and valves,

a pressure producing fuel pump means having an input connected to a fuel tank and an output connected to said fuel injection device by an eighth pipe and valves, said fuel pump means receiving motivation energy from said work means,

a pressure producing water pump means having an input connected to the output port of a water reservoir, the output of said water pump means connecting via a ninth pipe and valves to a plurality of water injection devices, said water pump means receiving motivation energy from said work means,

said water reservoir having an input port, an output port and a vent port that is connected to the atmosphere, the input port of said water reservoir connecting to the drain port of said steam reservoir by a tenth pipe and at least one valve, and

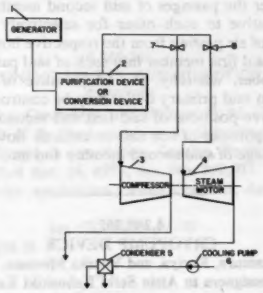
an electro-mechanical control means using electronic and mechanical signals from components as input signals, said control operating a plurality of valves in pipe lines, said control means generating output electronic signals and mechanical functions to control engine functions.

4,240,260

STEAM TREATING METHOD AND SYSTEM

Karl A. Gustafson, Njurunda, Sweden, assignor to SCA Development Aktiebolag, Sweden

Filed Nov. 8, 1978, Ser. No. 958,880
Claims priority, application Sweden, Nov. 29, 1977, 7713501
Int. Cl.³ F01K *17/00*
U.S. Cl. 60—670 **9 Claims**



1. A method of compressing low pressure steam which comprises dividing the low pressure steam into two steam flow paths, directing the first steam flow into a steam motor, in which steam motor said first steam flow is expanded so as to drive the steam motor, said steam motor being operatively connected to a compressor so that the steam motor drives the compressor, and directing the second steam flow into the compressor in which said second steam flow is compressed to a desired final pressure, said division into two steam flow paths being controlled so that the first steam flow through the steam motor generates sufficient energy to compress the second steam flow in the compressor to the desired final pressure.

4,240,261

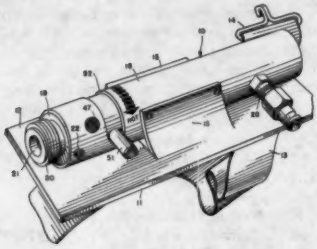
TEMPERATURE-ADJUSTABLE VORTEX TUBE ASSEMBLY

Leslie R. Inglis, Cincinnati, Ohio, assignor to Vortec Corporation, Cincinnati, Ohio

Filed Aug. 9, 1979, Ser. No. 65,093
Int. Cl.³ F25B *9/02*
U.S. Cl. 62—5 **14 Claims**

1. A temperature-adjustable vortex tube assembly comprising a vortex tube having a generator body provided with a compressed air inlet and having coaxial and oppositely-directed tubular outlets for hot and cold air, respectively; a housing defining a chamber receiving said vortex tube; said chamber having a primary outlet and a secondary outlet; a first

flow-dividing member disposed within said chamber and provided with a hot air passage and a cold air passage extending therethrough; means directing cold air from said cold air outlet of said vortex tube to said cold air passage of said first flow-dividing member and directing hot air from said hot air outlet of said vortex tube to said hot air passage of said first flow-dividing member; and a second flow-dividing member disposed within said chamber adjacent said first member and provided with a pair of separate passages extending therethrough; one of said passages of said second member communicating with said primary outlet and the other of said passages of said second member communicating with said secondary



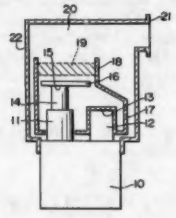
outlet; said first and second members being positioned and arranged so that air passing through the passages of said first member enter the passages of said second member and being movable relative to each other for selectively varying the proportions of air passing from the respective hot and cold air passages of said first member into each of said passages of said second member, whereby, the temperature of the air discharged from said primary outlet may be controlled by varying the relative positions of said first and second members to alter the proportions of hot and/or cold air flowing through said one passage of said second member and into said primary outlet.

4,240,262

CRYOPUMP DEVICE

Kazuaki Nakamura, Kariya, and Yutaka Momose, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 22, 1979, Ser. No. 41,422
Claims priority, application Japan, May 24, 1978, 53-61899
Int. Cl.[3] B01D *8/00*
U.S. Cl. 62—55.5 **6 Claims**



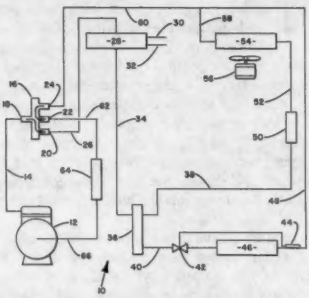
1. A cryopump device comprising a refrigerator section which has at least two expansion chamber means disposed in a space to be evacuated, shielding wall means disposed in said space and encircling said at least two expansion chamber means, said shielding wall means being formed of a thermally conductive material, said shielding wall means being in heat transfer contact with one of said at least two expansion chamber means, condensation panel means disposed inside the shielding wall means and being in heat transfer contact with the other of said at least two expansion chamber means, said shielding wall means having opening means proximate said condensation panel means for providing cooling of said space by the other expansion chamber means through said condensation panel means.

4,240,263

REFRIGERATION SYSTEM - METHOD AND APPARATUS

Thomas E. Brendel, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 3, 1979, Ser. No. 35,742
Int. Cl.[3] F25B *1/00*
U.S. Cl. 62—115 **4 Claims**



1. A refrigeration system including a first evaporator having a capillary type expansion device for controlling flow of refrigerant thereto and a second evaporator having a thermal expansion valve for controlling flow of refrigerant thereto, said system further comprising:

high pressure refrigerant vapor producing means having an inlet for receiving substantially vaporous refrigerant at a relatively low pressure and an outlet for discharging vaporous refrigerant at a relatively high pressure;

condenser means for receiving said high pressure vaporous refrigerant and for converting said vaporous refrigerant into a relatively high pressure mixture of liquid and vaporous refrigerant; and

separator means for receiving said relatively high pressure mixture from said condenser means and for separating a substantial portion of said liquid refrigerant from said vapor liquid mixture;

discharge means connected to said separator means including a first conduit for delivering said separated liquid refrigerant to said thermal expansion valve and said second evaporator, and a second conduit for delivering the remainder of said vapor liquid mixture to said capillary expansion device and said first evaporator; and

outlet means connected to said first and second evaporators for returning the refrigerant flowing therefrom to said vapor producing means.

4,240,264

INTERIOR UNIT OF A SPLIT TYPE AIR-CONDITIONING APPARATUS

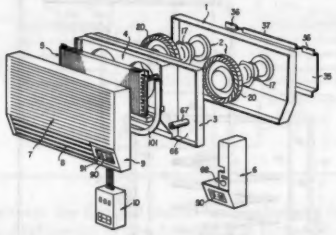
Minoru Nakada; Kenji Umezu, both of Fuji; Yasuhiro Shinma, Shimada; Kazuaki Kamiyama, Fujinomiya; Yoshihiro Udagawa; Masaya Yamazaki, both of Fuji; Mitsuo Murano, Fujinomiya, and Minoru Inoue, Shimizu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 30, 1978, Ser. No. 965,044

Claims priority, application Japan, Nov. 30, 1977, 52/160788[U]

Int. Cl.³ F04B *17/00*; F24H *3/06*

U.S. Cl. 62—125 **31 Claims**



1. An interior unit of a split type air-condition apparatus comprising:

a cabinet structure having an air inlet opening for introducing air and an air outlet opening for discharging air said cabinet structure including a rear plate for mounting said fan motor, a middle frame assembled to said rear plate, said middle frame fixing said heat exchanger and having a fan shroud for housing said centrifugal fan, a front panel assembled to said middle frame and having said air inlet opening and said outlet opening on its front side;

refrigeration cycle components arranged inside said cabinet structure including a heat exchanger;

means for circulating air including a centrifugal turbo fan with a plurality of backward curved blades disposed inside said cabinet structure, said centrifugal fan having a circular part raised in a longitudinal direction in the approximate center of said fan;

means for driving said centrifugal fan including a fan motor accommodated in said raised circular part and having a motor shaft extending in said longitudinal direction, said fan being fixed to said motor shaft at the center thereof wherein said rear plate includes a circular mount raised in said longitudinal direction, said mount supporting said fan motor about the approximate center of gravity of said fan motor along a line extending in said longitudinal direction, whereby the thickness of said apparatus in said longitudinal direction and the vibration of said motor are minimized.

4,240,265

MIST SPRAY APPARATUS FOR AIR CONDITIONER CONDENSER

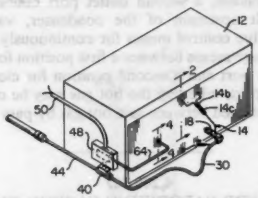
Robert L. Faxon, P.O. Box 17064, Pensacola, Fla. 32522

Continuation-in-part of Ser. No. 832,923, Sep. 13, 1977, Pat. No. 4,170,117. This application Feb. 8, 1979, Ser. No. 10,462

Int. Cl.³ F28D *5/00*

U.S. Cl. 62—171 **2 Claims**

1. Apparatus for minimizing the cost of operation of an air conditioner by applying a minimum volume of liquid mist onto a generally vertical heat exchange condenser which is a part of the air conditioning unit, the condenser including spaced fluid conduits connected to generally parallel spaced fins, said apparatus comprising a liquid spray nozzle for spraying a fine mist of liquid upon the fluid conduits of the condenser, a liquid supply line connected to said liquid spray nozzle, an electrically operated liquid control valve connected to control the flow of liquid through said supply line to said spray nozzle, a temperature sensing member positioned to receive a portion of the mist sprayed by the liquid spray nozzle and positioned to sense the temperature conditions within said condenser, the temperature sensing member being connected to control said liquid control valve, support means projecting outwardly in a cantilever manner from said condenser and supporting said liquid spray nozzle in horizontally spaced relation outwardly



from said condenser with said liquid spray nozzle directed inwardly toward said fluid conduits and fins, said support means including a plurality of relatively adjustable elongate support members having portions for engaging a portion of said condenser, and said plurality of relatively adjustable support members being adaptable and adjustable for conveniently attaching said liquid spray nozzle to various spaced condenser conduits and various grill coverings of different air conditioning units.

4,240,266

APPORTIONING MEANS FOR REFRIGERATION SYSTEM

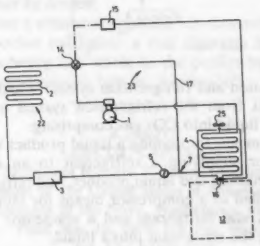
Gerald R. Scrine, Cambridge, and William D. M. Carter, Huntingdon, both of England, assignors to Shipowners Refrigerated Cargo Research Association, London, England

Filed Apr. 24, 1978, Ser. No. 899,077

Claims priority, application United Kingdom, Apr. 29, 1977, 18017/77

Int. Cl.³ F25B *41/00*

U.S. Cl. 62—196 B **9 Claims**



1. In a refrigeration system for a substantially enclosed space and including a compressor, a condenser and an evaporator, conduit means connecting said compressor, condenser and evaporator to form a cooling circuit, a hot gas by-pass conduit having a first junction with said cooling circuit between the compressor and the condenser, and a second junction with said cooling circuit between the condenser and the evaporator, and means provided in the system for apportioning flow of compressed refrigerant gas from the compressor between the condenser and the by-pass conduit so that during a temperature controlling phase of refrigeration, the gas flows through both the condenser and the by-pass conduit, the apportioning means being arranged to control the relative proportions of the gas flowing through the condenser and the by-pass conduit to provide either net heating or net cooling of the enclosed space,

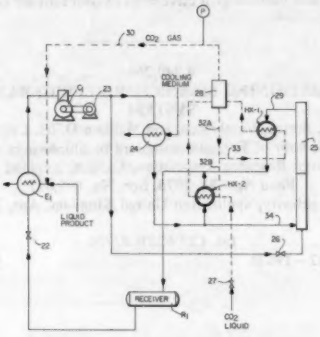
the improvement which comprises, said system including a fan to force air over the evaporator, a single temperature measuring device located at a point where the air has been cooled by being passed over the evaporator, means operable by said temperature measuring device to control operation of the apportioning means, said apportioning means being in the form of a continuously modulating valve located at said first junction of the hot gas by-pass conduit with the cooling circuit, said valve having a hot gas intake port for receiving hot gas from the compressor, a first outlet port connected to the hot gas by-pass conduit, a second outlet port connected to the cooling circuit upstream of the condenser, valve closure means, and valve control means for continuously modulating said valve closure means between a first position for closing off the first outlet port and a second position for closing off the second outlet port, whereby the hot gas may be continuously variably apportioned between said hot gas by-pass conduit and the condenser.

4,240,267

SYSTEM FOR VAPORIZING CARBON DIOXIDE UTILIZING THE HEAT BY-PRODUCT OF THE REFRIGERATION SYSTEM AS A HEAT SOURCE

Harold L. Shaw, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 4, 1978, Ser. No. 966,273
Int. Cl.[3] F25B *27/02, 13/00*
U.S. Cl. 62—238 E **15 Claims**



1. A carbonation and refrigeration system which utilizes a heat by-product from the refrigeration system to vaporize carbon dioxide liquid into CO_2 gas comprising:

refrigeration means for cooling a liquid product including a receiver for supplying a refrigerant to an evaporator means for cooling said liquid product, said refrigernat also being supplied to a compressor means for increasing the pressure of said refrigerant and a condensor means for condensing the refrigerant into a liquid;

carbonation means for introducing CO_2 gas into said liquid product, said carbonation means including a supply of liquid carbon dioxide;

first heat exchanger means for transferring a quantity of heat from said condensed liquid refrigerant to said carbon dioxide liquid;

second heat exchanger means for transferring an additional quantity of heat from said refrigerant to said carbon dioxide liquid when refrigeration load conditions of said refrigeration system fall below a predetermined level;

desuperheater means in communication with the refrigerant at the output side of said compressor for lowering the temperature thereof;

conduit means for supplying refrigerant which has passed through said condensor to said first heat exchanger means; and

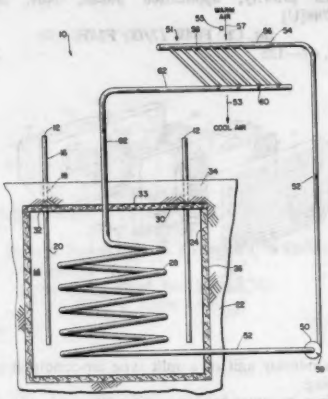
conduit means for supplying refrigerant which has passed through said desuperheater means to said second heat exchanger means.

4,240,268

GROUND COLD STORAGE AND UTILIZATION

Shao W. Yuan, 6701 Montour Dr., Falls Church, Va. 22043

Filed Oct. 13, 1978, Ser. No. 951,518
Int. Cl.[3] A25D *23/12*; F24H *7/00*
U.S. Cl. 62—260 **11 Claims**



1. A system for extracting, transmitting, storing, recovering and utilizing cold, said system comprising:

a. apparatus for extracting cold from the environment;

b. transmitting means for transmitting said cold from environment above the ground to a location below the surface of the ground; said transmitting means comprising a heat pipe;

c. storage means for storing cold, said storage means including a substance which is capable of changing phase, said substance being located at said location below the surface of the ground for receiving and storing cold transmitting thereto by said transmitting means;

d. recovery means for recovering cold from said storage means and delivering it to a second environment; and

e. utilizing means connected to said recovery means for receiving cold therefrom and dispersing said cold throughout said second environment.

4,240,269

HEAT PUMP SYSTEM

Rudy C. Bussjager, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 29, 1979, Ser. No. 43,285
Int. Cl.[3] F25B *13/00*
U.S. Cl. 62—324 A **9 Claims**

1. A heat pump system including a refrigeration circuit comprising:

a compressor having a discharge line and a suction line,

a first heat exchanger,

a second heat exchanger,

each heat exchanger including a plurality of heat transfer circuits arranged to provide series flow of refrigerant through the circuits when the heat exchanger is used as a condenser and parallel refrigerant flow through the circuits when the heat exchanger is used as an evaporator,

expansion means connected to each of the heat exchangers for expanding refrigerant fiowing into the heat exchanger when the heat exchanger serves as an evaporator,

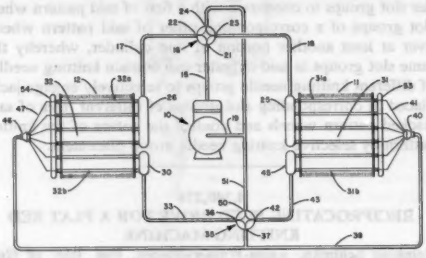
first reversing means connected to the compressor, the first heat exchanger and the second heat exchanger for direct-

ing refrigerant to flow in series through the circuits of the heat exchanger serving as a condenser and for receiving refrigerant from the heat exchanger serving as an evaporator,

refrigerant conduit means connecting the compressor and said heat exchangers to provide a closed refrigerant circuit,

said refrigerant conduit means having a passageway interconnecting the expansion means of said heat exchangers,

second reversing means operatively associated with the first reversing means and disposed in the refrigerant circuit



between the first and second heat exchangers for permitting refrigerant to flow from the heat exchanger operating as a condenser through said passageway into the expansion means of the other heat exchanger operating as an evaporator and for receiving refrigerant from the heat exchanger serving as the evaporator,

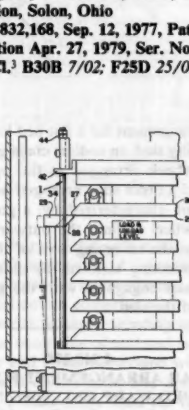
at least one of said reversing means being connected to the suction line of the compressor such that refrigerant received from the heat exchanger serving as the evaporator is directed to the compressor to form a complete refrigerant circuit.

4,240,270

ADJUSTABLE SPACERS FOR FLAT PLATE CONVEYORS

Thomas P. McLaughlin, Macedonia, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Division of Ser. No. 832,168, Sep. 12, 1977, Pat. No. 4,180,987.
This application Apr. 27, 1979, Ser. No. 33,555
Int. Cl.³ B30B *7/02*; F25D *25/00*
U.S. Cl. 62—341 **8 Claims**



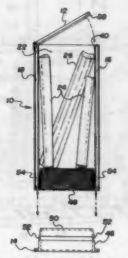
1. A spacer bar for insertion between and spacing in vertically spaced parallel relation, throughout an effective length of the bar, the flat plates of a flat plate type conveyor, said bar being elongated and having at least two pairs of longitudinally extending, transversely spaced, flat parallel side surfaces, said surfaces having at least corresponding portions disposed within corresponding different sections of the bar located throughout substantially the full effective length thereof and the transverse spacing between each pair of surfaces being different, and said bar having at least one end shaped to provide means for rotating said bar about a longitudinal axis thereof.

4,240,271

REFRIGERATED CIGARETTE PACK FACSIMILE

Susan E. Brownlow, 9776 Chestnut, Lakeside, Calif. 92040

Filed May 11, 1979, Ser. No. 37,651
Int. Cl.³ F25D *3/08, 3/10*
U.S. Cl. 62—457 **1 Claim**



1. A refrigerated cigarette box facsimile comprising:

(a) a vertically elongated container having the general shape of a flip-top cigarette box;

(b) said container having four thin, insulated side walls and a thin, insulated lid hinged to the top of one of said side walls and pivotal from an open position into a closed position snapped tightly into the tops of said four side walls;

(c) spring means biasing said lid into the closed position;

(d) a thickened hollow bottom plug filled with chillable heat sink material;

(e) detent means defined in the bottoms of said side walls and in said plug wherein said plug is snap-fitted between the bottoms of said side walls to define the bottom of said container, and removable to permit the insertion thereof into a freezer without requiring that the contents of the container be frozen;

(f) whereby a simulated cigarette box dimensioned to fit in a shirt pocket to replace a real cigarette box, and being bottom-heavy and stable in the pocket by virtue of the thickened heat-sink bottom, is provided.

4,240,272

ARCTIC CANTEEN

Herbert R. Tiede, and Richard P. Pierzchala, both of Quantico, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1979, Ser. No. 49,690
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **14 Claims**

1. A portable canteen system for controlling the temperature of comestibles contained therein regardless of the ambient temperature, comprising:

a container for holding said comestibles, said container having an opening therein;

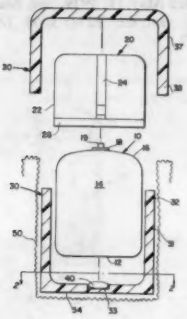
means for insulating said container from the ambient, said insulating means being cup-shaped and including side walls and a cover attached thereto; said insulating means including at least one cavity located in at least one of the side walls of said insulating means and including means for sealing each respective one of said at least one cavity from the ambient, said sealing means being pivotally attached to said respective sidewall of said insulating means at the location of said at least one cavity,

said sealing means pivoting toward, and away from, said

respective sidewall to make said at least one cavity inaccessible, and accessible, respectively, from the outside of said insulating means,

means insertable within said at least one cavity for generating a thermal change within said insulating means,

whereby when said sealing means is pivoted away from said outside of said insulating means, an actuated generating



means may be inserted into said respective cavity and said sealing means pivoted back toward said outside of said insulating means, such that said generating means will be completely sealed from the ambient, and when said generating means is manually activated and placed within said at least one cavity and in physical contact, simultaneously, with both said at least one cavity and said container, a thermal change is effected within said insulating means.

4,240,273

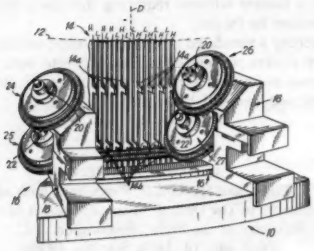
METHOD OF KNITTING AND KNITTING MACHINE ARRANGEMENT THEREFOR

Leonard Beckenstein, 15 Farm Rd., St. James, N.Y. 11780

Filed Mar. 27, 1978, Ser. No. 890,290

Int. Cl.[2] D04B *15/76*

U.S. Cl. 66—42 R **14 Claims**



1. A method of controlling a knitted pattern by arranging pattern wheels and needles on a knitting machine having a cylinder provided with a first predetermined number of uniformly spaced slots about the periphery thereof; a plurality of knitting needles arranged within said cylinder slots, each knitting needle having a hook formed thereon and a butt in spaced relation to the hook, said knitting needles being arranged in said cylinder slots in a plurality of like groups, the needles of each group having a common spacing between the needle hooks and butts which is different from that of the other groups; a plurality of yarn feeding stations for said knitting needles; the method comprising the steps of arranging a plurality of stacked pattern wheels at each yarn feeding station, each pattern wheel at each feeding station being arranged to engage only the knitting needles of one of said knitting needle groups, said pattern wheels each being provided with a second predetermined number of jack accommodating uniformly spaced slots equally spaced as said cylinder slots, said cylinder and pattern wheel slots forming a plurality of slot groups, corresponding slot groups on said cylinder and pattern wheels normally continuing to register with each other with relative movements between said cylinder and pattern wheels during the entire rotation of the cylinder; arranging needles of one of said knitting needle groups in a first of said cylinder slot groups to cooperate with a first of said pattern wheel slot groups of a corresponding one of said pattern wheels over at least one portion of said cylinder, and arranging knitting needles of another of said knitting needle groups in said first of said cylinder slot groups to cooperate with a first of said pattern wheel slot groups of a corresponding other of said pattern wheels over at least another portion of said cylinder, whereby the same slot groups in said cylinder can contain knitting needles of different knitting needle groups to selectively engage jacks placed in corresponding slot groups of different ones of said stacked pattern wheels and control the nature of the knitted pattern by selective knitting needle group placement.

4,240,274

RECIPROCATING SLED DRIVE FOR A FLAT BED KNITTING MACHINE

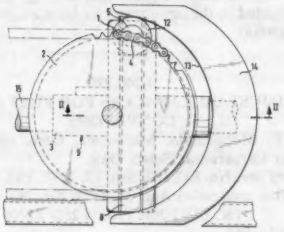
Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schelber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,821

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822293

Int. Cl.[2] D04B *7/04*

U.S. Cl. 66—64 **5 Claims**



1. A drive arrangement for a flat bed knitting machine having a reciprocating sled, an endless chain guided and driven by two sprocket wheels arranged at the opposite ends of the needle beds, and a cross slide arranged between the sled and the endless chain, characterized by: a guide surface (**13**) for each sprocket wheel to limit the outward movement of the cross slide (**9**) in the reversing area of the sled, and a force transmitting connecting element (**5**) slidably coupled to the cross slide (**9**) and engagable with the guide surface in the reversing area of the sled.

4,240,275

EYELET BAR ARRANGEMENT FOR JACQUARD EQUIPPED WARP KNITTING MACHINES

Hans Fiedler, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 14,813

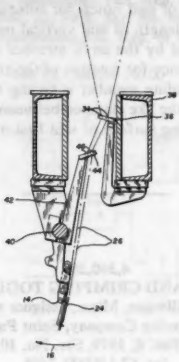
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809391

Int. Cl.[3] D04B *23/00, 27/00*

U.S. Cl. 66—203 **5 Claims**

1. In a jacquard equipped warp knitting machine having a guide bar with a plurality of guides affixed thereon, a first

eyelet bar with a plurality of eyelets disposed therein affixed to the frame of said machine, a dropper pin bar affixed to the main suspension shaft of said machine, dropper pin activator cords operatively coupled, via said eyelets, between said dropper pin



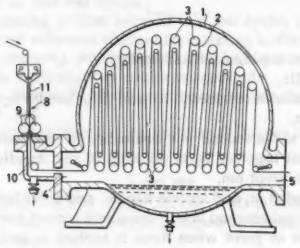
and said jacquard mechanism, the improvement comprising means for providing relatively constant tension on said dropper pin activator cords during the swing movement of said dropper bar.

4,240,276

SEAL DEVICE

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,170
Claims priority, application Japan, Nov. 7, 1978, 53-137003
Int. Cl.³ D06B *23/18*
U.S. Cl. 68—5 E **2 Claims**



1. A seal device to be provided with a pair of seal rubber rolls for closing a cloth material inlet or outlet formed in a steamer drum body adapted for hygro-thermic treatment of a cloth material, said seal device comprising:

a tubular cloth material passage extending upward at least 400 mm above the outer side of said seal rubber rolls and having the lower end thereof provided with an opening which abuts on said rubber rolls, said opening having a transverse width a little wider than the breadth of said cloth material and measuring 3 mm or thereabout in longitudinal width;

a liquid supply mechanism adjoining the inlet part of said cloth material passage; and

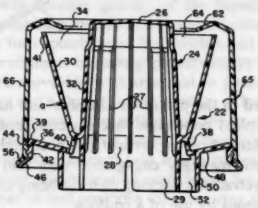
a pair of weir plates disposed within said liquid supply mechanism and each said weir plate being located on an opposite side of said cloth material passing therethrough, said weir plates being in spaced relation forming a gap therebetween through which the cloth material passes, means connected to said weir plates and arranged to permit adjustment of said gap by moving said weir plates toward or away from one another thereby varying said gap.

4,240,277

TWO-PIECE LIQUID RINSE AGENT DISPENSER FOR CLOTHES WASHING MACHINE

Philip J. Manthei, Ripon, Wis., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 15, 1979, Ser. No. 84,723
Int. Cl.³ D06F *39/02*
U.S. Cl. 68—17 A **10 Claims**



1. A two piece liquid rinse agent dispenser for use in a clothes washing machine having a clothes basket with an open upper end and a clothes agitator extending upwardly at the central axis of said clothes basket, both of which are mounted for rapid rotation thereabout, said dispenser including in combination:

an inner annular member including a central, hollow hub having an annular side wall, a closed upper end and an open, lower end for receipt on said agitator, the hollow hub freely receiving the agitator therewithin without mechanical connection between the hub and the agitator, a first annular wall extending outwardly from said hub at a predetermined angle with respect thereto to define a first chamber between said side wall and said first annular wall, said first chamber having an open upper end, a lower annular flange joined to said hub, and first attachment means provided along the free end of said flange and an inverted cup-shaped cover dimensioned for receipt over said inner annular member having a generally cylindrical side wall, an upper end wall and an open lower end, said cover including an opening defined in said upper end wall through which said liquid rinse agent is poured into said chamber and second attachment means provided along said open, lower end of said cover, said first and second attachment means joining said cover and said inner annular member and producing a liquid tight seal therebetween upon connection of the former to the latter, the first and second attachment means constituting the sole connection between the inner annular member and the cover and connecting said inner annular member and the cover to each other solely about the respective peripheries of the free end of the flange and of the lower end of the cover, the side wall of said cover and said first annular wall of said inner annular member defining a second chamber for receipt of said liquid rinse agent upon rotation of said dispenser at a predetermined speed.

4,240,278

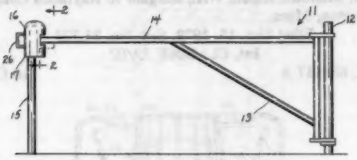
GATE LOCKING DEVICE

Peter J. Linder, 3109 Ramblewood Rd., Ellicott City, Md. 21043

Filed Nov. 9, 1978, Ser. No. 959,157
Int. Cl.³ E05B *65/06*
U.S. Cl. 70—101 **11 Claims**

1. A gate locking device comprising: a cap member having a side opening defined by side walls and adapted to restrictively receive the end of a horizontally swinging gate bar, said cap member defining a protected chamber at a level below the level of said side opening and separated therefrom by wall

means, said cap member being open at the bottom to provide egress to the protected chamber; means adapted to mount said cap member on a vertical gate post for limited rotation less than 360° about a vertical axis; and locking means within the protected chamber to at times lock said cap member against rotation, said locking means including disconnectable linkage



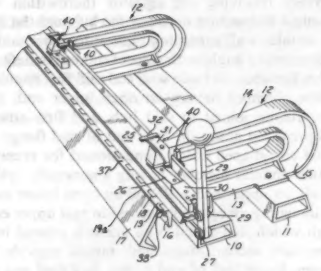
means mounted in the protected chamber and having at least one key-controlled removable link pin connection means, an interlocking element on the vertical gate post, and a retractable locking element matingly engageable with said interlocking element, said retractable locking element being connectable to said linkage means by use of a padlock.

4,240,279

SHEET METAL BRAKE

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Nov. 27, 1978, Ser. No. 963,698
Int. Cl.³ B21D *11/20*
U.S. Cl. 72—319 **2 Claims**



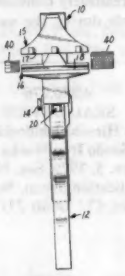
1. A brake for bending sheet metal comprising
a pair of spaced base rails,
a plurality of C-shaped members positioned on said base rails at longitudinally space points,
each said C-shaped member comprising a lower arm fixed to said rails and an upper arm spaced from and overlying said lower arm,
a first member fixed on the lower arms of said C-shaped members and having a clamping surface,
an anvil member including a horizontal portion and a vertical portion,
said vertical portion of said anvil member having notches therein,
means for clamping said anvil member on said first member to clamp a piece of sheet metal between said anvil member and said clamping surface of said first member,
a second member having a bending surface,
said anvil member having a longitudinal edge extending along said hinge line,
means resiliently mounting said anvil member on said upper arms in a manner such that said upper arms extend through said notches in said vertical portion of said anvil member,
and at least one abutting portion extending laterally on the upper arm of each said C-shaped member,
said abutting portion extending vertically from adjacent the upper end of the vertical portion of said anvil member along the side of said notch for substantially the greater portion of the length of said vertical portion and adapted to be contacted by the anvil member and thereby minimize any tendency for rotation of the anvil member when the second bending member is swung to bend a piece of sheet metal or the like clamped between the anvil member and the clamping surface of said first member.

4,240,280

HAND CRIMPING TOOL

Floyd L. Foslien, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 8, 1979, Ser. No. 10,372
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—410 **7 Claims**



1. A hand crimping tool comprising:
a first handle,
a second handle connected to said first handle by a main pivot pin,
a first jaw and a second jaw connected to said handles for movement together upon pivoting of said handles about said main pivot pin,
a lever pivoted on said second handle, said lever being connected to said second jaw to cause said second jaw to urge said lever to pivot when force is applied to said second jaw,
a latch member pivoted on a latch pivot pin attached to said second handle, said latch member being formed to engage said lever to retain said lever against the pivoting force applied by said second jaw,
a latch pivot spring urging said latch to pivot to engage said lever,
a latching spring urging said lever to pivot to urge said lever into position for engagement by said latch member,
a trip abutment on said first handle in position to contact said latch member and cause said latch member to pivot to disengage said latch from said lever when said handles have traveled a distance sufficient to move said jaws through a predetermined crimping movement, and
a signal abutment on said second handle aligned with and spaced from said lever when it is engaged by said latch member to be struck by said lever when it is released from said latch member to provide sensory perception to the user of the completion of the predetermined crimping movement.

4,240,281

AUTOMATIC SELF-CHECKING OF TEST EQUIPMENT

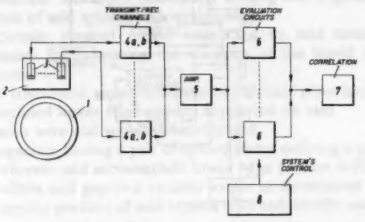
Dieter Lather, Rheurdt, and Karl Ries, Mülheim an der Ruhr, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,948

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1977, 2753472

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—1 DV **15 Claims**



1. Method of self-checking a system for the nondestructive testing of structural materials which includes a plurality of transducers, respectively transmitters and/or receiver channels for the transducers, and signal processing stages connected to the receiver channels, said system operating with a sequence of test cycles wherein at least some of the test cycles use different ones of the transducers, comprising the steps of:

(i) generating simulated receiver signals and setting them into the receiver channels for processing by the processing stages during the said test cycles, for checking the function of the receiver channels and at least some of said stages;

(ii) generating return signals for the transducers for passage by them into the receiver channels but without using any coupling of the transducers to a test object, for processing by the processing stages during a repetition of at least some of said test cycles;

(iii) repeating at least some of said test cycles but using an external reference element for coupling to the transducers and returning thereto signals launched in transmit phases of the particular test cycles as repeated;

storing the result of the processing as per the preceding steps; and

using result differences for isolating defects in the system.

4,240,282

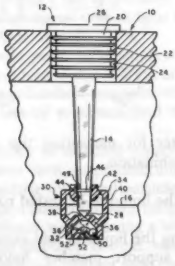
COMBINED LEVEL INDICATOR AND HYDROMETER

John F. Nelson, New Lenox, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 27, 1979, Ser. No. 79,639

Int. Cl.³ G01N *9/12*

U.S. Cl. 73—447 **9 Claims**



1. A combined liquid level indicator and hydrometer comprising: a light transmitting member having an outer indicating surface and reflector surface means adapted to be submerged in liquid for reflecting light to said indicating surface when the liquid is below a predetermined level; chamber means comprising an upper means and a lower means, said upper means being connectable to said member and said lower means defining a chamber which is connected to said upper means and having access means of a predetermined size in alignment with said member and positioned for submersion in said liquid, and a float smaller than said predetermined size and of a predetermined specific gravity captured in said lower chamber and moveable between upper and lower positions in accordance with the relative specific gravity of the liquid, said lower chamber being initially formed in an open condition and lockable thereafter for capturing said float within said lower chamber, said lower chamber including hinged closure means carrying at least one moveable wall arranged to pivot between an opened position and a closed locked position to form one of the walls for capturing said float within said lower chamber, and said chamber means including means for locating said float in one of said positions adjacent said access means for viewing said float through said indicating surface and for locating said float in the other of said positions for obscuring the float from view.

4,240,283

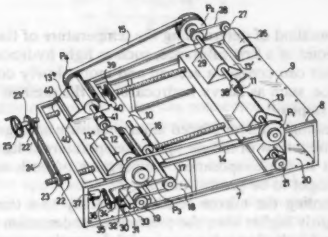
APPARATUS FOR TESTING POWER TRANSMISSION BELT

Hiroshi Takano, Miki; Yasuhiro Hashimoto, Kobe, and Mutsuo Takesako, Akashi, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Nov. 9, 1978, Ser. No. 959,132

Int. Cl.³ G01N *3/56*; G01M *13/02*

U.S. Cl. 73—7 **11 Claims**



1. In an apparatus for testing a power transmission belt including a frame, a first shaft having first and second pulleys fixed to the opposite ends thereof, a second shaft having third and fourth pulleys fixed to the opposite ends thereof, a drive belt mounted between said first and third pulleys and a test belt mounted between said second and fourth pulleys, the improvement comprising;

(a) an upper stationary plate fixedly mounted on said frame to rotatably support said first shaft,

(b) an upper movable plate slidably supported on said frame to rotatably support said second shaft at different pre-set fixed distances from said first shaft during testing in accordance with test belts of correspondingly different lengths,

(c) a first idler supported on said upper movable plate,

(d) a second idler supported on a first lower stationary plate positioned below said upper stationary plate,

(e) a third idler supported on a second lower stationary plate positioned below said upper movable plate, said drive belt being mounted between said first and third pulleys through said idlers, and one of said idlers being movably supported to change the effective length, and thus the tension, of said drive belt to maintain a constant load on said test belt, the pitch diameters of these pulleys being

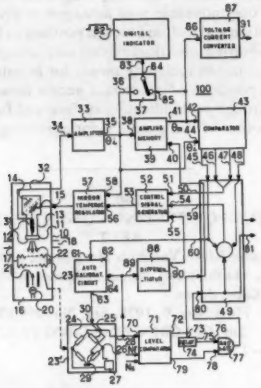
selected such that they have the relationship that $d_1:d_3=d_2:d_4$, in which d_1, d_2, d_3 and d_4 are pitch diameters of said first, second, third and fourth pulleys, respectively, whereby fatigue of the test belt is observed by visual inspection thereof.

4,240,284

METHOD AND APPARATUS FOR DETERMINING THE TEMPERATURE OF THE CONDENSATION POINT OF A SUBSTANCE

Van L. Nguyen, Antony, France, assignor to Sereg, Montrouge, France

Filed Aug. 3, 1979, Ser. No. 63,630
Int. Cl.³ G01N *25/12*
U.S. Cl. 73—17 A **25 Claims**



1. A method of determining the temperature of the condensation point of a first substance, such as light hydrocarbons, in a gas that can contain a second and more slowly condensing substance, such as heavy hydrocarbons, the method comprising the steps of:

(a) heating a mirror placed in an enclosure arranged for the throughflow of the gas up to a temperature at least equivalent to the evaporation temperature of both substances thought to be present in the gas;

(b) cooling the mirror relatively quickly to a temperature slightly higher than the presumed condensation temperature for the first substance, and then continuing to cool the mirror more slowly until the appearance of the first condensates on the mirror;

(c) storing the value of the mirror temperature at which said first condensates appear; and

(d) repeating steps (a) to (c) using the stored temperature value as the value of the presumed condensation temperature in step (b).

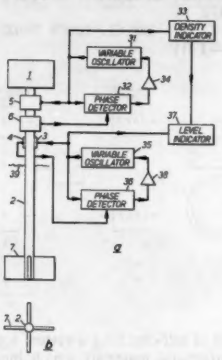
4,240,285

MEASUREMENT OF THE DENSITY OF LIQUIDS

Roger M. Langdon, Colchester, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Aug. 8, 1979, Ser. No. 64,818
Claims priority, application United Kingdom, Aug. 9, 1978, 32803/78
Int. Cl.³ G01N *9/00*; G01F *23/28*
U.S. Cl. 73—32 A **6 Claims**

1. A device for measuring the density of a liquid including a member arranged for immersion into the liquid, first transducer means for applying a torsional vibration to said member so as to move a portion of the liquid in which the member is immersed, and means for varying the frequency of the torsional vibration to produce a resonance mode, the frequency of the vibration at the resonance mode being indicative of the density of the liquid, and wherein said first transducer means for applying the torsional vibration to the member and second transducer means for sensing the resultant torsional vibration induced in the member are coupled to an elongate member arranged to be partially immersed in the liquid, one end of the elongated member being attached to a relatively massive body



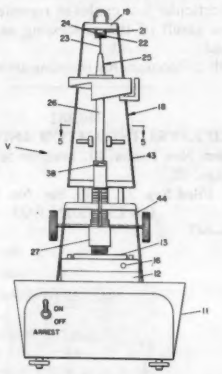
located above the surface of the liquid, the first and second transducer means also being mounted above the surface of the liquid at points adjacent to the relatively massive body, and the member being mounted at a generally free end portion of the elongated member which is remote from said first and second transducer means and thereby adapting said member for suspended immersion in the associated liquid.

4,240,286

VISCOSIMETER

Allan J. Bentz, Guilford, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,580
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **5 Claims**



1. A viscosimeter for measuring the viscosity of liquids comprising, in combination,

a base,

a container for the liquid to be tested rotatably mounted on said base,

means for heating the liquid in said container,

an upstanding support member having an upper end mounted on said base,

a torsion wire arranged to be detachably mounted at its

upper end on said support member in a vertically extending position,

a plunger detachably mounted on the lower end of said torsion wire for immersion in the liquid in said container,

a vertically extending spindle operatively attached and mounted on said support member to form a torsion wire and spindle assembly whereby rotation of said container rotates said spindle and torsion wire assembly into an angular position corresponding to the drag of the liquid on said plunger immersed therein,

transducer means for electrically sensing said angular position of said spindle and torsion wire,

electronic readout means connected to said transducer means for indicating the viscosity of the liquid in said container,

said transducer means comprises an arcuate plate having an inclined lower edge portion supported on said

torsion wire and spindle assembly and

a capacitor having a pair of spaced plates defining a gap and wherein said arcuate plate lower edge portion is disposed within said gap to a variable extent as determined by the angular position of said torsion wire and spindle assembly.

4,240,287

SAND DETECTION

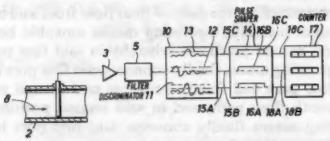
Harm Mast; Jan W. Kraayeveld; Peter B. Vriezen, and Gerrit J. Wunnink, all of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 2, 1978, Ser. No. 957,265

Claims priority, application United Kingdom, Dec. 20, 1977, 52958/77

Int. Cl.³ G01N *15/07*

U.S. Cl. 73—61 R **9 Claims**



1. A method of detecting solid sand particles in a fluid flowing from a well through a conduit, comprising:

an acoustic transducer means having a housing with a piezoelectric element disposed therein, said piezoelectric element being biased into contact with one wall of said housing, said piezoelectric element in addition being coupled to a preamplifier disposed in said housing;

generating an electric signal by allowing the particles to impinge against the housing of said acoustic transducer means;

filtering said signal to pass frequency components thereof in a pulse train ranging within the frequency band of about 50 kHz to about 500 kHz;

comparing the values of the amplitudes of each said pulse train in the filtered signal with at least one predetermined range of amplitude values;

generating for each pulse train an electric standard pulse having a predetermined time period and amplitude when the maximum amplitude of said pulse train has a value that is above said one of predetermined range of amplitude values; and,

counting the number of standard pulses generated by said pulse train within each set predetermined period.

4. Means for detecting solid sand particles in a fluid flowing from a well through a conduit, comprising:

an acoustic transducer means having a housing with a piezoelectric element disposed therein, said piezoelectric element being biased into contact with one wall of said housing, said piesoelectric element in addition being coupled to a preamplifier disposed in said housing;

indicating means for indicating the number of impacts made by particles on the acoustic transducer means; and,

circuitry means interconnecting said transducer means and said indicating means, said circuitry means comprising filter means for processing the electric signals generated by the transducer means to pass frequency components thereof in a pulse train ranging within the frequency band of about 50 kHz to about 500 kHz, a pulse height discriminating means and a pulse shaper means, said two latter means being adapted to form for each pulse train a standard pulse having a predetermined time period and amplitude, said standard pulse being passed on to the indicating means each time the value of the maximum amplitude of a pulse train is above a preset range of values in the filtered signal.

4,240,288

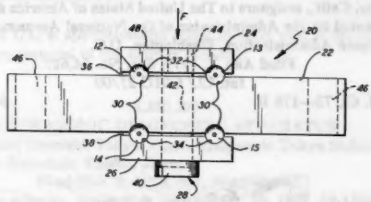
FORCE TRANSDUCER

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088; Richard L. Bates, 125 Hillside Way, Camillus, N.Y. 13031, and Richard W. French, 609 Vine St., Liverpool, N.Y. 13088

Continuation of Ser. No. 701,649, Jul. 1, 1976, Pat. No. 4,055,078. This application Aug. 29, 1977, Ser. No. 828,344

Int. Cl.² G01L *1/22*

U.S. Cl. 73—141 A **6 Claims**



1. A transducer comprising:

a plurality of impedance devices connected together to form an electrical circuit, the impedance of said devices varying in response to the application of an external force to said devies, said circuit generating an output signal in response to the application of an electrical potential across said circuit, the value of said output signal depending upon the difference in impedance between said devices;

pre-stressing means for applying predetermined force substantially equally to each of said impedance devices to effect first impedance characteristics in said circuit;

force transmitting means for transmitting input forces to a portion of said impedance devices to vary the impedances in said portion of said devices, said force transmitting means being located in the path of the external load, said external load being applied directly to said force transmitting means to cause the output signal to be in direct response to the external load.

4,240,289

MASS AND FORCE METER

Kaspar Saner, Dübendorf, Switzerland, assignor to Wirth Gallo & Co., Zurich, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,542

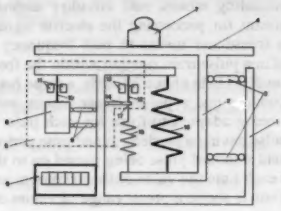
Claims priority, application Switzerland, Feb. 2, 1978, 1573/78

Int. Cl.³ G01L *1/04, 1/10*

U.S. Cl. 73—141 R **6 Claims**

1. A mass and force meter comprising a frame; a load support; a measuring system comprising a first and a second dynamometer, and a reference mass; a load spring fixed to said frame and to said load support, said first dynamometer being fixed to said frame, said reference mass being fixed to said first

dynamometer, said second dynamometer being fixed to said frame; and a measuring spring fixed to said second dynamometer and to said load support, said measuring spring being weaker than said load spring.

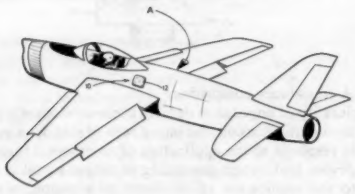


4,240,290

SKIN FRICTION MEASURING DEVICE FOR AIRCRAFT

Lawrence C. Montoya, and Donald R. Bellman, both of Lancaster, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,617
Int. Cl.[3] G01C 21/00
U.S. Cl. 73—178 R 5 Claims



1. A skin friction measuring device for an aircraft comprising:

A. a base plate adapted to be mounted on an aircraft;

B. a friction plate adapted to be disposed in contiguous relation with an airstream as the airstream is caused to flow over the aircraft;

C. support means mounting said friction plate on said base plate in spaced relation therewith, and supporting said friction plate for skin friction induced displacement; and

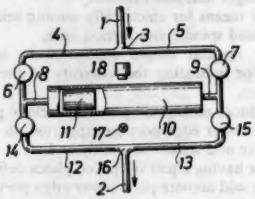
D. displacement measuring means connected to said friction plate for providing an electrical output signal indicative of the magnitude of skin friction induced displacement of said friction plate as the airstream is caused to flow thereover, including an electrical potentiometer adapted to be connected to a source of electrical potential and pivotally displaceable arm connected to the potentiometer for varying the electrical resistance of the potentiometer proportionally to pivotal displacement imparted to the arm, and motion transfer linkage interconnecting said friction plate with said arm for imparting pivotal displacement to said arm proportionally to skin friction induced displacement imparted to said friction plate as the airstream is caused to flow thereover, whereby the electrical resistance to said potentiometer is varied proportionally to the skin friction induced displacement of the friction plate.

4,240,291

FLOW METER

Roland J. E. Andersson, Bjärred; Lars-Göran Olsson, Löddeköpinge, and Bengt G. Paulsson, Lund, all of Sweden, assignors to Gambro AB, Lund, Sweden

Filed Nov. 7, 1978, Ser. No. 958,390
Claims priority, application Sweden, Nov. 9, 1977, 7712642
Int. Cl.[3] G01F 11/04
U.S. Cl. 73—861.05 19 Claims



1. A flow meter having an inlet and an outlet for measuring the flow rate of fluid through a conduit, comprising:

first and second flow paths connected to said inlet, third and fourth flow paths connected to said outlet;

a measuring chamber including a first port and a second port and including a float disposed therein for movement in first and second directions in response to fluid flow;

a detector for directly detecting the movement of said float while said float is moving in said first direction or in said second direction in said measuring chamber, so that the time it takes said float to pass said detector while said float is moving in said first direction or said second direction may be measured; and

means for controlling the path of fluid flow from said inlet to said outlet including operating means movable between first and second positions, whereby in said first position said operating means fluidly connects said first port to said first flow path and fluidly connects said second port to said fourth flow path, and in said second position said operating means fluidly connects said first port to said third flow path and said second port to said second flow path whereby when said operating means is in said first position said fluid is permitted to flow from said inlet through said first and fourth flow paths through said measuring chamber in said first direction so as to move said float in said first direction past said detector, and when said operating means is in said second position said fluid is permitted to flow from said inlet through said second and third flow paths through said measuring chamber in said second direction so as to move said float in said second direction, opposite to said first direction, past said detector.

4,240,292

METHOD FOR TRIGGERING ULTRASONIC FLOW METER AND ULTRASONIC FLOW METER ADAPTED FOR SAME

Eduard A. Zalessky, ulitsa Tashkentskaya, 130, kv.11, and Vladimir V. Smyshlyaev, ulitsa Michurina, 116, kv. 57, both of Kuibyshev, U.S.S.R.

Filed Feb. 28, 1979, Ser. No. 16,339
Claims priority, application U.S.S.R., Mar. 3, 1978, 2585951
Int. Cl.[3] G01F 1/66
U.S. Cl. 73—861.27 9 Claims

1. A method for triggering an ultrasonic flow meter having a synchronized ring circuit, said method comprising the steps of

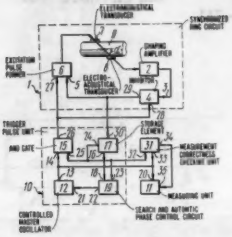
applying a train of trigger pulses to said synchronized ring circuit;

periodically turning said synchronized ring circuit on and off by said trigger pulses;

varying the repetition period of said trigger pulses within the range of possible changes of the repetition period of autocirculation pulses of said synchronized ring circuit until an autocirculation pulse is matched with a trigger pulse;

discontinuing the application of said trigger pulses to said synchronized ring circuit at the moment an autocirculation pulse is matched with a trigger pulse, by continuous automatic phase control to match the frequency of the trigger pulses with that of the autocirculation pulses; and

resuming the application of said trigger pulses to said synchronized ring circuit as soon as there are no autocirculation pulses in said synchronized ring circuit.



4,240,293

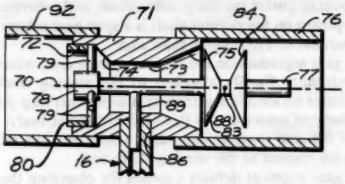
VORTEX GENERATING DEVICE

Nathaniel Hughes, Palm Springs, Calif., assignor to Hughes Sciences Group, Inc., Palm Springs, Calif.

Continuation-in-part of Ser. No. 886,289, Mar. 13, 1978, Pat. No. 4,189,101, and a continuation-in-part of Ser. No. 886,288, Mar. 13, 1978, Pat. No. 4,192,465. This application May 21, 1979, Ser. No. 40,557

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **7 Claims**



1. A vortex generating device comprising:

means defining a straight passage having an inlet port and an outlet port;

a restriction formed in the passage between the inlet and outlet ports; and

first and second adjacent bluff bodies disposed between the restriction and one of the ports, the second bluff body lying between the first bluff body and the restriction to form between the bluff bodies an annular channel, the second bluff body having a flat surface facing toward the restriction.

4,240,294

FLOW METER

Per-Olof Grände, s:t Petri Kyrkogata 15, S-222 21 Lund, Sweden

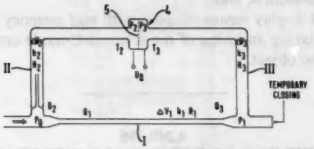
Filed Dec. 15, 1978, Ser. No. 970,091

Claims priority, application Sweden, Dec. 16, 1977, 7714338

Int. Cl.³ G01F *1/38*

U.S. Cl. 73—861.47 R **15 Claims**

1. A flow meter for the registration of pulsating liquid flows, preferably for registration of small blood flows, the flow being measured by means of a differential pressure measurement over a first flow resistance (I) with the resistance R_1, and the flow meter comprising, besides the flow resistance I, also a high pressure part in the form of a flow resistance (II) and a lower pressure part in the form of a flow resistance (III) with the resistances R_2 and R_3, respectively, wherein the resistances R_1, R_2 and R_3 are selected so as to adjust the pressures on each side of the differential pressure meter in phase with each other



independent of the frequency of the flow pulsations, the flow resistances (I), (II) and (III) with the resistances R_1, R_2 and R_3, respectively, having moduli of elasticity k_1, k_2 and k_3, respectively, said factors being adapted to fulfill the following formula

$$R_2/k_2=(R_3+R_1)/k_3$$

in which $1/k_1$ is approximately equal to zero, that is the flow resistance material in the main is inelastic.

4,240,295

ULTRASONIC DIAGNOSING APPARATUS

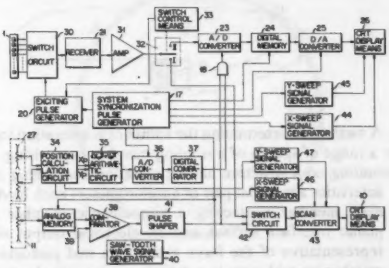
Michiyoshi Uranishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 8, 1978, Ser. No. 958,692

Claims priority, application Japan, Nov. 10, 1977, 52-134983

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—607 **15 Claims**



1. An ultrasonic diagnosing apparatus comprising:

a probe having a plurality of transducer means for radiating ultrasonic beams toward an object to be examined and for converting ultrasonic echoes into electrical echo signals;

first display means for displaying a B-mode image of the object;

means for setting a selected C-mode cross-section to be observed and diagnosed while observing said B-mode image;

means for storing data representing the selected C-mode cross-section set by said setting means;

means for detecting the position of said probe;

means for producing control signals responsive to signals from said storing means and said detection means;

means responsive to said control signals for moving said transducer means with respect to the object;

means responsive to said control signals for electronically driving said transducer means to scan the selected C-mode cross-section;

means responsive to said control signals for processing said electrical echo signals converted by said transducer means to produce electrical signals representing the selected C-mode cross-section;

memory means responsive to said control signals for storing the electrical signals representing the selected C-mode cross-section; and

second display means coupled with said memory means for displaying an image of the selected C-mode cross-section of the object.

4,240,296

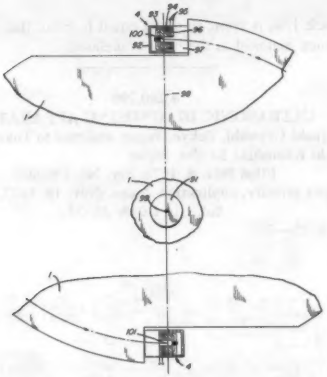
MEASUREMENT OF TORSIONAL ACCELERATION OF A ROTATING BODY

Robert M. Kolodziej, Varysburg, N.Y., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 944,526, Sep. 21, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,283

Int. Cl.³ G01P *15/09*

U.S. Cl. 73—650 **6 Claims**



1. A method of determining the values of acceleration torque over a range of speeds of a rotating member comprising:

mounting on a structure having vibration dampening characteristics a material pair of accelerometers each having a mass member contacting a piezoelectric member at a planar interface surface and an electrical output signal representative of the force exerted on said piezoelectric member by said mass in a direction perpendicular to said interface surface for rotation with such rotating member generally 180° about the axis of rotation of said rotating member;

positioning said accelerometers generally tangential to the rotation of such rotating member and such that the centers of mass of both of said mass members lie on a line with and generally equally spaced from the center of rotation of said rotating member;

further positioning said accelerometers such that each of said interface surfaces are parallel to such line;

summing the output signals of said accelerometers; and

accelerating said rotating member over a range of rotational velocities while analyzing such sum as representative of the acceleration torque of such rotating member as a function of speed.

4,240,297

PRESSURE GAUGE FOR SPHYGMOMANOMETERS

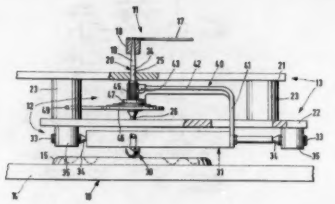
Blasius Speidel, Hochmeisterstrasse 33, 7455 Jungingen, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,410

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812755

Int. Cl.³ G01L *7/08*

U.S. Cl. 73—711 **12 Claims**



1. A pressure gauge of the type which gives a pressure indication by means of a rotating indicator comprising in combination:

a pressure gauge frame;

a sensing shaft journalled in the pressure gauge frame for rotation about a sensing shaft axis;

pressure sensing means associated with the sensing shaft and operable to transduce and convert pressure values into corresponding angular displacements of the sensing shaft;

a pointer shaft journalled in the pressure gauge frame for rotation about a pointer shaft axis which is oriented substantially perpendicularly to the sensing shaft axis, the pointer shaft carrying said rotating indicator; and

a magnifying angle gear drive connecting the sensing shaft to the pointer shaft in such a way that small angular displacements of the sensing shaft create much larger angular displacements of the pointer shaft, the angle gear drive including a gear segment on the sensing shaft and a cooperating pinion on the pointer shaft; and wherein

the pinion on the pointer shaft is a spur gear whose teeth are parallel to the pointer shaft axis;

the gear segment is in the form of a drive arm, which has one extremity fixedly attached to the sensing shaft and includes on its other extremity a tooth-carrying yoke in the shape of a sector of a thin-walled tubular body, the teeth of the gear segment extending axially and in a radial plane with respect to the sensing shaft; and

the gear segment defines a means for changing the mangification ratio of the angle gear drive to a higher or lower ratio by providing adjustability of the radial distance of the teeth-carrying yoke from the sensing shaft axis.

4,240,298

MOTION AMPLIFIER FOR CONDITION RESPONSIVE GAUGE INSTRUMENT

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 708,470, Jul. 26, 1976, abandoned, which is a continuation of Ser. No. 413,483, Nov. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 186,120, Oct. 4, 1971, abandoned. This application Dec. 12, 1977, Ser. No. 859,514

Int. Cl.² G01L *7/04*

U.S. Cl. 73—732 **54 Claims**

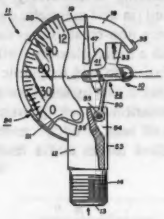
1. A condition responsive gauge instrument comprising:

(a) a condition responsive element for producing a single output motion in response to condition changes in a pressure source to which it is connected;

(b) axis means defining a pivot axis; and

(c) a two stage motion amplifier means operably supported on said condition responsive element for floating conjoint

movement therewith; said motion amplifier means cooperatively interacting in its motion path with said axis means to produce an output motion correlated to the condition change motion incurred by said condition responsive element;



(d) said amplifier means being adapted to receive its input from the produced motion of said condition responsive element whereby the first of said stages produces a multiplied output of the input received from said condition responsive element and the second stage produces a multiplied output of an input received from the output of the first stage.

4,240,299

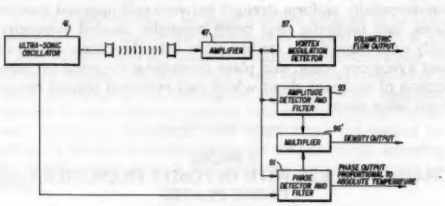
METHOD AND APPARATUS FOR DETERMINING FLUID DENSITY AND MASS FLOW

Robert D. Joy; Richard J. Mahany; Glenn A. Thorne, and Russell F. Colton, all of Cedar Rapids, Iowa, assignors to J-Tec Associates, Inc., Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 2,644, Jan. 11, 1979, abandoned. This application Jan. 11, 1980, Ser. No. 111,501

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.23 **33 Claims**



1. A method of determining the density of a fluid stream, comprising the steps of:

generating Karman vortices in the fluid stream;

directing a signal through the fluid stream toward the Karman vortices which modulate said signal, said signal being directed from a point of direction to a point of reception;

detecting the modulation frequency of the signal at said point of reception;

detecting the amplitude of the signal at said point of reception; and,

using said amplitude as an indicator of said density.

4,240,300

OPERATION MECHANISM

Katsufusa Tanaka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

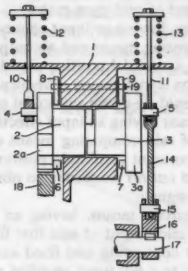
Filed Aug. 8, 1978, Ser. No. 932,083

Claims priority, application Japan, Aug. 8, 1977, 52/95431

Int. Cl.³ F16M *5/40*

U.S. Cl. 74—2 **9 Claims**

1. An operation mechanism which comprises a first resilient member for storing and releasing energy required for a reciprocal movement of a drivable member; an input shaft having a first pin for rotatably holding an end of a first rod connected to said first resilient member at an eccentric position; a second resilient member for storing and releasing energy required for returning the drivable member; and an output shaft having a second pin for rotatably holding an end of a second rod connected to the second resilient member and an end of an output rod for operating the drivable member at an eccentric position;



wherein one end of the input shaft and one end of the output shaft are facing and coaxial and a clutch for interlocking the ends of said facing shafts for one half turn with a free rotation of the other half turn is formed on said facing shafts and the output rod connected to the output shaft is reciprocally moved during intermittent movement of the input shaft and the output shaft for about a half-turn in one direction.

4,240,301

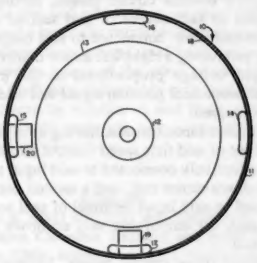
FREE GYRO MOTOR DRIVE CIRCUIT

George D. Mason, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,806

Int. Cl.³ G01C *19/08*

U.S. Cl. 74—5.7 **13 Claims**



1. A free gyro motor drive circuit comprising:

a gyro motor having a cylindrical housing; a shaft rotatable in said cylindrical housing; a permanent magnet mounted on said shaft; a first up-down motor coil, having an input terminal, connected in series to a second up-down motor coil, having an input terminal, each of said up-down motor coils being mounted on an internal wall of said cylindrical housing and being positioned 180° apart; and a first right-left motor coil, having an input terminal, connected in series to a second right-left motor coil, having an input terminal, each of said right-left motor coils being mounted on said internal wall of said cylindrical housing, being positioned 180° apart, and 90° from said first up-down motor coil;

first sensing means mounted on said internal wall of said cylindrical housing, mounted in line with said first up-

down motor coil, and having an output, for generating an up-down sinusoidal position signal having a frequency corresponding to the rotational speed of said gyro motor;

second sensing means; mounted on said internal wall of said cylindrical housing, mounted in line with said first right-left motor coil, located 90° from said first sensing means, and having an output; for generating a right-left sinusoidal position signal having a frequency corresponding to the rotational speed of said gyro motor;

comparing means, having an input connected to said output of said first sensing means and an output, for converting said up-down sinusoidal position signal to a constant amplitude position signal having a frequency identical to the frequency of said up-down sinusoidal position signal;

first filtering means having an input effectively connected to said output of said comparing means and an output for passing said constant amplitude position signals below a predetermined cut off frequency to obtain a fixed amplitude position signal;

absolute value circuit means, having an input operatively connected to said output of said first filtering means and an output, for converting said fixed amplitude sinusoidal position signal to a full wave rectified position signal;

second filtering means, having an input connected to said output of said absolute value circuit means and output, for changing said full wave rectified position signal to a direct current error signal;

polarity and temperature control circuit means, having an output, for determining a frequency at which said direct current error signal will change polarity and to compensate for temperature variations affecting the performance of the free gyro motor drive circuit;

a summer having an input effectively connected to said output of said second filtering means and said output of said polarity and temperature control circuit means;

first speed control circuit means, having a first input connected to said output of said first sensing means, and a second input connected to said output of said summer, for producing an up-down motor control signal having an output voltage proportional to the product of said up-down sinusoidal position signal and said direct current error signal;

second speed control circuit means, having a first input connected to said output of said second sensing means, and a second input connected to said output of said summer for producing a right-left motor control signal having an output voltage proportional to the product of said right-left sinusoidal position signal and said direct current reference signal;

first motor drive circuit means, having an input connected to said output of said first speed control circuit means, a first output effectively connected to said input terminal of said first up-down motor coil, and a second output effectively connected to said input terminal of said second up-down motor coil, for amplifying said up-down motor control signal; and

second motor drive circuit means, having an input connected to said output of said second speed control circuit means, a first output effectively connected to said input terminal of said first right-left motor coil and a second output effectively connected to said input terminal of said second right-left motor, for amplifying said right-left motor control signal.

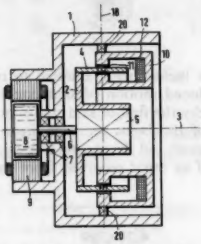
4,240,302

GYROSCOPIC INSTRUMENT

Hartmut Karnick, Kiel, Fed. Rep. of Germany, assignor to Anschütz & Co., G.m.b.H., Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,734
Int. Cl.[3] G01C *19/30*; G01P *3/49*
U.S. Cl. 74—5.46 **15 Claims**

1. In a gyroscopic instrument, the combination comprising a frame, a gyroscope rotor including a co-axial drum-shaped sleeve of a non-magnetic and electrically conductive material, means for mounting said rotor within said frame for rotation and for universal pivotal movement about axes intersecting the axis of rotation of said rotor, a magnetic device having outer magnetic pole means, inner magnetic pole means surrounded thereby and a gap therebetween, the field lines produced by said pole means extending transversely through said gap, means on said frame and on said magnetic device for so mounting said magnetic device non-rotatably as to locate said sleeve within said air gap with a radial clearance affording said sleeve pivotal movability relative to said magnetic device about said axes, and driving means carried by said frame and connected to said rotor whereby rotation of said gyroscopic rotor causes said magnetic device to induce eddy currents in said sleeve producing electro-motive forces and a resultant tendency of



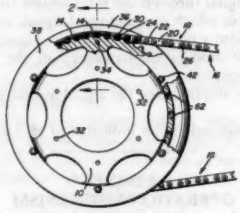
said rotor, in event of a deviation of the rotor axis from the axis of said magnetic device, to perform a precessional motion eliminating said deviation, the gap of said magnetic device being confined by a pair of evenly spaced opposed annular cylindrical faces of said pole means, the width of said faces being smaller than the axial length of said sleeve, both ends of said sleeve projecting out of said gap, said magnetic device being of a type producing in said gap a magnetic field of circumferentially uniform strength between said opposed annular faces, said magnetic field being normally located symmetrically with respect to a median plane extending transversely of said gyroscope rotor, said plane containing the point of intersection of said axes about which said universal pivotal movement takes place.

4,240,303

CHAIN SPROCKET WITH OPPOSITE FRANGIBLE SIDE GUIDE PLATES

Earnest D. Mosley, P.O. Box 4922, Greenville, Miss. 38701

Filed Sep. 27, 1978, Ser. No. 946,102
Int. Cl.[2] F16H *55/30, 57/04*
U.S. Cl. 474—144 **10 Claims**



1. A chain driven wheel sprocket for use in driving the rear wheel of a racing motorcycle wherein the sprocket is driven by a sprocket chain mechanically engageable therewith, and the sprocket is provided with opposite frangible side guide flanges having at least substantially parallel opposing flange guide surfaces for retaining therebetween the sprocket chain with a total lateral clearance between the guide surfaces and chain of

from 0 to about 0.050 inches, said flange guide surfaces projecting outwardly beyond the chain at least the radial height of the chain and being constructed of a non-metallic frangible material having a minimum elastic limit such that breaking of the guide flange, rather than permanent deforming thereof, occurs under lateral impact or force, whereby continued operation of the chain and sprocket is not substantially impaired after occurrence of such lateral impact or force on the guide flange.

4,240,304

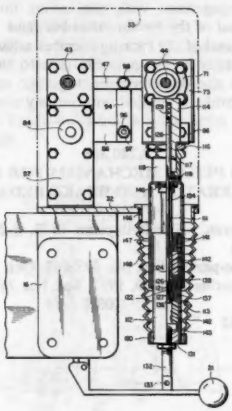
VALVE OPERATING SYSTEM

Edward E. Griffiths, 6499 Trinidad Dr., San Jose, Calif. 95120

Filed Jun. 30, 1978, Ser. No. 920,674

Int. Cl.³ F16K *31/05*; G05G *9/00, 11/00, 5/06*

U.S. Cl. 74—471 R **14 Claims**



1. In a valve operator: an input member adapted to be connected to a drive source for movement in an axial direction, an axially movable output member positioned telescopically of the input member for connection to the operating member of a valve, detent means for locking the input and output members together for movement in concert, said members being free for axial movement relative to each other when not locked together by the detent means, and means for selectively actuating the detent means to lock the input and output members together.

4,240,305

RETAINING CLAMP FOR AN ADJUSTABLE STEERING COLUMN

Ermanno Denaldi, Turin, and Gian P. Rolfo, Grugliasco, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Nov. 9, 1978, Ser. No. 959,133

Claims priority, application Italy, Nov. 9, 1977, 69506 A/77

Int. Cl.³ B62D *1/22*

U.S. Cl. 74—493 **9 Claims**

1. A retaining clamp for a motor vehicle steering column which is adjustable longitudinally and angularly about a pivot axis transverse its longitudinal axis, wherein said clamp comprises:

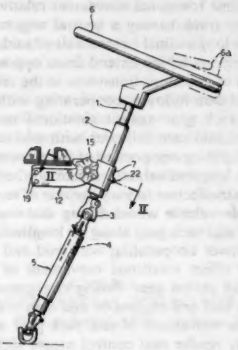
a bracket adapted to be fixed to a vehicle body cross member and having means defining said pivot axis of said steering column;

a resilient seat member defining a seat for said steering column having an axis coaxial with said longitudinal axis of said steering column in use, said seat member having two arms extending substantially in the same direction transverse to said seat axis and engaged with said bracket for pivotal movement about said pivot axis; and

a manually operable screw clamp for clamping said arms to said bracket and for simultaneously clamping said seat member against said steering column, in use, to retain it in said seat, said clamp being manually releasable to allow axial sliding movement of said steering column relative to said seat member and pivotal movement of said steering column with said seat member about said pivot axis,

wherein said screw clamp has a screw-threaded shaft which defines said pivot axis,

each of said arms of said seat member is formed with a frusto-conical surface and said bracket has two plates each having a complementary frusto-conical surface engaged with a respective frusto-conical surface on an arm, said arms being clamped between said bracket plates and said frusto-conical surfaces being wedged together on tightening of said clamping screw, said frusto-conical surfaces



acting as bearing surfaces for pivoting of said seat member when said clamp is released,

each said plate has a projection upon which said complementary frusto-conical surface is formed and which defines an aperture coaxial with said complementary frusto-conical surface;

said screw-threaded shaft extends through said apertures and has a head at one end which abuts an outer face of one of said plates and a manually rotatable knob threaded onto its opposite, screw-threaded end, said knob being adapted to exert pressure on a face of the other of said plates, and

said plates are resiliently deformable such that, upon tightening of the clamp by rotation of said knob, said plates are deformed towards each other to clamp the arms of the seat member between them.

4,240,306

RACK AND PINION ASSEMBLIES

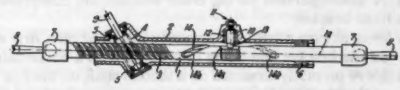
Frederick J. Adams, Clevedon, England, and Ralph M. Lehman, Chagrin Falls, Ohio, assignors to Cam Gears Limited, Hertfordshire, England

Filed Jan. 9, 1978, Ser. No. 868,114

Claims priority, application United Kingdom, Jan. 10, 1977, 722/77

Int. Cl.³ B62D *1/20*

U.S. Cl. 74—498 **3 Claims**



1. A variable ratio steering apparatus for use in effecting turning movement of a steerable vehicle wheel, said apparatus comprising a longitudinally extending rack gear movable along its longitudinal central axis to transmit an axially di-

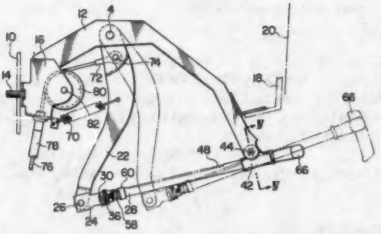
rected force, said rack gear being adapted to be connected with the steerable vehicle wheel to effect turning movement of the steerable wheel under the influence of the axially directed force, a pinion gear disposed in meshing engagement with said rack gear and adapted to be connected with a manually actuatable input member to effect movement of said rack gear along its longitudinally extending central axis in response to movement of the input member, and control means connected with said rack gear for effecting a variation in the rate of movement of said rack gear along its longitudinal central axis to thereby vary the rate of turning movement of the steerable vehicle wheel, said control means including a cam track disposed on and movable with said rack gear and a cam follower which cooperates with said cam track to effect rotational movement of said rack gear relative to said pinion gear and to hold said rack gear against rotational movement relative to said pinion gear, said cam track having a central region which extends parallel to the longitudinal central axis of said rack gear and a pair of end regions which extend from opposite ends of said central region in directions transverse to the central axis of said rack gear, said cam follower cooperating with said cam track to hold said rack gear against rotational movement during engagement of said cam follower with said central region of said cam track during one portion of the movement of said rack gear along its longitudinal central axis to thereby render said control means ineffective to vary the rate of turning movement of the steerable vehicle wheel during said oue portion of the movement of said rack gear along its longitudinal central axis, said cam follower cooperating with said end regions of said cam track to effect rotational movement of said rack gear relative to said pinion gear during engagement of said cam follower with said end regions of said cam track during other portions of the movement of said rack gear along its central axis to thereby render said control means ineffective to vary the rate of turning movement of the steerable vehicle wheel during the other portions of movement of said rack gear along its longitudinal central axis.

4,240,307

PARKING BRAKES

Takeo Yamazaki, Anjoshi, and Shigeki Miyagishi, Toyotashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariyashi, Japan

Filed Sep. 20, 1978, Ser. No. 944,204
Claims priority, application Japan, Sep. 25, 1977, 52-115055
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—503 **5 Claims**



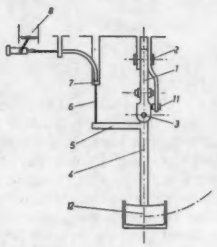
1. A hand-operated parkig brake mechanism, comprising:
a fixed bracket;
a lever having a free end pivotally mounted on a first shaft on the bracket and being connected with a brake cable;
a sleeve pivotally mounted on a second shaft on the free end of the lever, said second shaft extending normal to a plane in which the lever pivots;
a plunger having a handle at a free end to be gripped in a driver's palm for being pulled when the parking brake is applied, the plunger being rotatably connected with the sleeve whereby the plunger may rotate about its longitudinal axis through an angle and is provided with a longitudinal series of ratchet teeth;
first spring means urging said plunger toward rotation in one direction and second spring means normally urging the plunger reversely to the pulling direction of the plunger,
a guide member on the bracket for supporting the plunger slidably and swingably in the plane,
a pawl,
third spring means normally urging said pawl toward engagement with the ratchet teeth,
a locking member mounted on and longitudinally extending along the plunger in sliding fitted relation therewith, said sleeve further being provided with means for engaging the terminal end of the locking member to thereby lock the plunger against rotation around its axis,
fourth spring means normally urging the locking member toward engagement with the means for engaging the terminal end of the locking member, and
a hook at an end of the locking member adjacent the handle of the plunger at the opposite side to the driver to be gripped in the driver's palm together with the handle when the brake is applied without any conscious effort.

4,240,308

COMBINED PEDAL MECHANISM FOR COMBINED ACCELERATOR AND BRAKE PEDAL FOR MOTOR-CARS

Gösta E. Berggren, Hjälmhultsgatan 16 B, S-252 41 Helsingborg, Sweden

Continuation-in-part of Ser. No. 517,667, Oct. 24, 1974. This application Feb. 10, 1977, Ser. No. 767,470
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—512 **7 Claims**



1. A pedal assembly for simultaneously and continuously controlling the brake system and the power supply system having fuel supply means for a power driven vehicle, said assembly comprising:
(a) a single pedal having a first arm portion and a second arm portion;
(b) the first arm portion being effective to move to various power supply working positions in a first plane of operation and the second arm portion being effective to move to various brake working positions in a second plane of operation normal to said first plane;
(c) said second arm portion being connected to the brake system to effect braking while at a brake working position of said second arm portion in said second plane of operation;
(d) blocking means being disposed adjacent the second arm portion and being effective to prevent unintentional operation of the second arm portion while located in a non-braking position during operation of the first arm portion; and
(e) Bowden cable means, having a first end, a second end, a casing and a wire movably disposed in said casing;
(f) the first end being connected to said power supply means of the vehicle;
(g) the second end being connected to the first arm portion

to control said power supply means while at working position of said first arm portion in said first plane of operation;

(h) said casing of said Bowden cable means at said second end being fixed to the vehicle frame a spaced distance below said first plane in the direction of braking;

(i) said wire of said Bowden cable means at said second end being attached to the first arm portion, whereby braking action of said second arm portion is effective to automatically and continuously reduce the power supply without moving the first arm portion in said first plane of operation;

(j) a movement of the first arm portion in its first plane of operation being effective to control the power supply means upon simultaneous braking of the vehicle.

4,240,309

RATCHET DEVICES

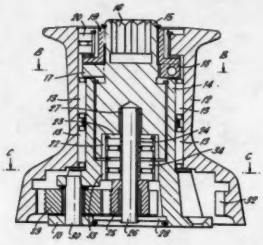
David Tyler, 6, Church Rd., Warsash, Southampton, England

Filed Mar. 6, 1978, Ser. No. 883,889

Claims priority, application United Kingdom, Mar. 7, 1977, 9428/77

Int. Cl.³ F16H *5/52*; B66D *1/30*; B25B *13/46*

U.S. Cl. 254—369 **10 Claims**



1. A winch including a drum rotatable on a normally fixed member, a driving member extending into the drum, and first and second ratchet means through which the driving member rotates the drum, the drum being rotatable in a first direction through the first ratchet means by turning the driving member in said first direction, and also being rotatable in said first direction through the second ratchet means by turning the driving member in the opposite direction, drive coupling means being provided which permit to-and-fro movement of the driving member without manual manipulation of said drive coupling means to enable the driving member to turn the drum through said second ratchet means alternately driving said drum in said first direction and moving freely in said other direction without transmitting drive to the drum.

4,240,310

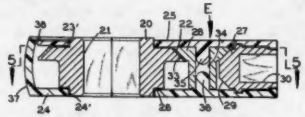
SOCKET WRENCH

Edmund H. Roth, 6310 SW. 4th Pl., Margate, Fla. 33063

Filed Mar. 28, 1979, Ser. No. 24,526

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.29 **2 Claims**



1. In a power-driven socket wrench having:

a socket member with a polygonal central opening for engaging a nut or a bolt head;

and a holder extending circumferentially around and rotatably supporting said socket member for rotation on an axis at the center of said opening;

said socket member having a series of gear teeth thereon extending circularly around its axis;

said socket member having an axial length which is substantially less than its width transverse to said opening;

said holder where it surrounds the socket member also having a dimension axially of said socket member which is substantially less than its width thereat tranversely of the socket member, whereby the holder with the rotatable socket member therein is insertable into a closely confined space;

the improvement which comprises:

a rotary input gear located in said holder completely to one side of the socket member and rotatable on an axis extending perpendicular to the rotational axis of the socket member, said input gear having an axial recess in its outer end for receiving a power-driven rotary shaft and having a series of gear teeth on its inner end extending circularly about its axis;

and an intermediate gear located in said holder at said one side of the socket member between said input gear and said socket member, said intermediate gear being rotatable on an axis extending parallel to the rotational axis of said socket member and having a circular series of gear teeth which mesh with said gear teeth on the input gear and with said gear teeth on the socket member for imparting the power drive from the input gear to the socket member.

4,240,311

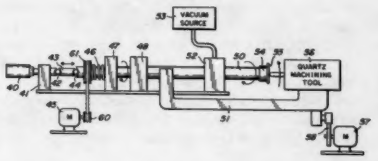
QUARTZ CRYSTAL RESONATOR

William T. Shinn, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 826,488, Aug. 22, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,834

Int. Cl.³ B23B *5/40*

U.S. Cl. 82—12 **3 Claims**



1. Apparatus for providing a recessed portion of a predetermined shape in at least one of the major surfaces of a wafer, comprising:

a rotary shaft having first and second end portions, the first end portion being concave and the second end portion having means for holding a wafer;

means for rotating said rotary shaft, said rotating means including bearing means for supporting said rotary shaft, pulley means, and motor means coupled to said rotary shaft by the pulley means for rotating said rotary shaft;

machining means for machining at least one of the major surfaces of the wafer to form a recessed portion of a predetermined shape, said machining means including a machining tool, a radius arm means coupled to the machining tool at one end and a pivot support at the other end, cam means, and motor means coupled to the machining tool by the cam means for pivoting the machining tool through an arc defined by the radius arm means and the pivot support to machine at least one of the major surfaces of the wafer to form a spherical, convex recessed portion; and

measuring means for adjusting the thickness of the machined recessed portion of the wafer, said measuring means including micrometer means, support means for supporting the micrometer means, and coupling means for coupling the supported micrometer means to said rotary shaft, said

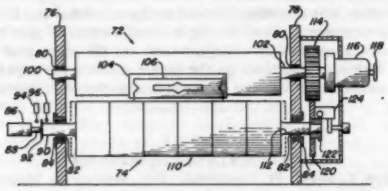
coupling means further including spring means, first and second ball bearings and an intermediate shaft with concave first and second end portions, the micrometer means including a shaft with a concave end portion, the first ball bearing engaging the concave end portion of the micrometer shaft and the concave first end portion of the intermediate shaft, the second ball bearing engaging the concave second end portion of the intermediate shaft and the concave first end portion of said rotary shaft, and the spring means engaging the support means and providing a bias force for retaining the first and second ball bearings between the respective concave end portions.

4,240,312

APPARATUS FOR IMPROVING WEAR LIFE OF ROTARY DIE CUTTER ANVIL COVERS

William F. Ward, Sr., Hampstead, Md., assignor to The Ward Machinery Company, Cockeysville, Md.

Filed May 15, 1979, Ser. No. 39,131
Int. Cl.³ B23D *25/12*; B26D *1/56*
U.S. Cl. 83—311 **4 Claims**



1. Apparatus for extending the useful life of a resilient cover on an anvil roll for a rotary die cutter comprising in combination:

a die holder roll, having die cutting rules mounted thereon, rotatable at a first selected speed;

a laterally reciprocable anvil roll, having said resilient cover thereon adapted for penetration by said die cutting rules, including a first gear associated therewith and driven by a second gear on said die holder roll, rotatable at a second selected speed different from said first selected speed of said die holder roll tending to cause said die cutting rules to penetrate said cover at first sequential circumferentially spaced locations upon successive revolutions of said anvil roll; and

speed changing means including gear means, connected between said first gear and said anvil roll, operable in response to lateral reciprocation of said anvil roll for adding to and subtracting from the speed provided by said first gear to add to and subtract from the speed of said anvil roll an amount less than the difference between said first and second selected speeds causing said die cutting rules to actually penetrate said cover at a second different location circumferentially spaced from said first different location upon substantially successive revolutions of said anvil roll.

4,240,313

ROTARY CUTTING KNIFE MOUNTING

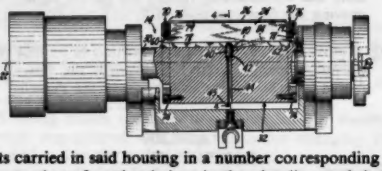
Andrew J. Gillespie, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,782
Int. Cl.³ B23D *25/00*
U.S. Cl. 83—343 **9 Claims**

1. Improved apparatus for sectioning a continuous web of the type having:

a rotary drum over which the web passes in a winding course thereon, and

a rotary cutter assembly including a housing and a plurality of cutting knives carried in said housing, the rotary drum and the cutter assembly being rotatable about parallel axes, the knives on said cutter assembly being elongated and having cutting edges thereof which are disposed parallel to said axes of rotation, said cutting edges being brought into contact with the surface of said rotary drum to effect sectioning of said web thereon during rotation of said rotary drum and said cutter assembly, wherein the improvement comprises:



pivots carried in said housing in a number corresponding to the number of cutting knives in the plurality, each knife being received on an associated one of said pivots, and

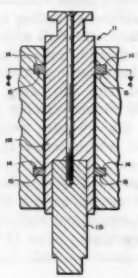
elastic means engaged with the ends of each such knife and normally applying bias directed radially inwardly of said cutter assembly to each such knife to maintain the cutting edge thereof parallel to said fixed axes and to urge each such knife against the associated pivot.

4,240,314

CENTERING AND WEAR COMPENSATING MEANS FOR PUNCH PRESSES AND THE LIKE

John W. Teeslink, Clearfield, Utah, assignor to TLC Engineering, Inc., Layton, Utah

Filed Jun. 19, 1979, Ser. No. 50,145
Int. Cl.³ B26F *1/14*
U.S. Cl. 83—635 **7 Claims**

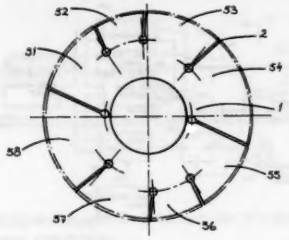


1. An improvement in punch presses and the like, including a turret having at least one machined bore therethrough adapted to receive the elongate shaft portion of a tool holder in close tolerances therein for longitudinal reciprocal movement of said shaft in said bore, the improvement, whereby the usable life of the turret bore, tool holder, tool and die of such press is significantly increased, comprising providing at least three equiangularly spaced wells of uniform depth extending into said turret from the wall of the bore therein in a direction substantially normal to the axis of said bore; positioning plugs of a resilient, long wearing, self-lubricating material, lengthwise into said wells, respectively, said plugs having a length greater than the depth of said wells, so that the plugs are compressed into the respective wells by the shaft of said tool holder when said shaft is centered in said bore, with said plugs being maintained in compressed, sliding engagement with the surface of said shaft as said shaft reciprocates in said bore.

4,240,315
CIRCULAR SAW BLADE

Jorma Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Feb. 8, 1979, Ser. No. 10,370
Claims priority, application Finland, Feb. 16, 1978, 780507
Int. Cl.³ B27B *33/08*
U.S. Cl. 83—848 **2 Claims**

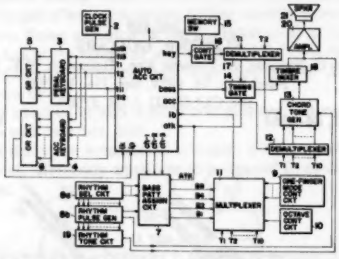


1. A circular saw blade divided into two sections by means of two radial slots which extend from the periphery of the blade inwardly almost to the eye of the blade, and each section of the blade is further divided into a plurality of sectors by means of radial slots of different length, two adjacent sectors having a different size, different weight, and different natural frequency.

4,240,316
KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Yasuhiko Okuyama; Koji Tanaka, both of Ora; Yoshiro Nakayama, Kumagaya, and Hiroshi Kato, Ageo, all of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Jun. 12, 1978, Ser. No. 914,684
Claims priority, application Japan, Jun. 17, 1977, 52-71682; Jun. 17, 1977, 52-71683; Sep. 9, 1977, 52-107980; Sep. 22, 1977, 52-114145; Nov. 7, 1977, 52-133345; Nov. 10, 1977, 52-135117
Int. Cl.³ G10H *1/38, 5/00*
U.S. Cl. 84—1.01 **13 Claims**



1. A keyboard type electronic musical instrument including a keyboard comprising a plurality of keys and corresponding key switches, said instrument comprising:

note signal generator means for generating binary information corresponding to respective notes of a keyboard sequentially and cyclically by utilizing timing pulses of a fixed frequency,

converter circuit means for sequentially decoding said binary information to form parallel signals of respectively different timings and for supplying the timing signals to respectively corresponding said key switches of said keyboard,

key switch circuit means for actuating, upon depression of at least one key of said keyboard, corresponding said key switch of said at least one depressed key so as to deliver said supplied timing signal,

OR circuit means for OR-processing all the timing signals obtained from said key switch circuit means into a key depression signal of time-divided serial timing defining one of a note and chord and for transmitting said key depression signal by one signal line of said keyboard,

note/chord detection and storage means for detecting the one of said note and chord assigned by the key depression signal of time-divided serial timing,

tone signal production means for producing a tone signal in correspondence to the detected one of said note and chord assigned by the key depression signal of time-divided serial timing, and

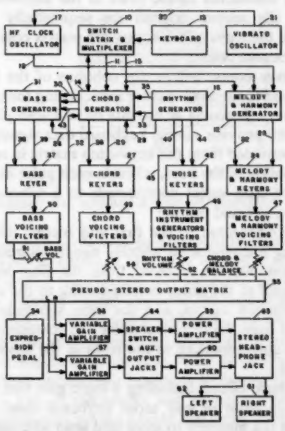
output means for amplifying said tone signal and driving a loudspeaker, whereby to produce the detected one of said note and chord defined by said key depression signal of time-divided serial timing;

wherein said instrument further comprises waveshaping circuit means for strobing the key depression signals fed from said OR circuit means and for delaying the key depression signal with one timing, thereby minimizing an influence due to signal transmission lag between said converter circuit means and said note/chord detection and storage means.

4,240,317
ELECTRONIC MUSICAL INSTRUMENT

Gerald L. Kmetz, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 9, 1977, Ser. No. 831,876
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **3 Claims**



1. An electronic musical instrument, comprising

a keyboard having a plurality of keys for selecting predetermined musical notes in predetermined octaves;

an oscillator for providing a high frequency clock signal;

an encoder coupled to the keyboard for providing digital note address signals in response to manipulation of the keys on the keyboard, wherein the least significant bits of each said note address signal indicate a predetermined musical note and the most significant bits of each said note address signal indicate a predetermined octave;

a note generator responsive to said note address signal for providing an output frequency signal corresponding to said selected musical note in said selected octave, wherein the note generator includes

a control ROM that is responsive to said least significant bits of said note address signal for providing a note control signal;

a programmable divider that is responsive to said note control signal for dividing said high frequency clock signal to provide a signal corresponding to said predetermined musical note;

a plurality of frequency dividers connected in series to the output of the programmable divider for providing from their respective outputs a plurality of signals corresponding to said selected musical note in successively lower octaves; and

an octave multiplexer that is responsive to said most significant bits of said note address signal for selecting one of said plurality of series connected frequency dividers to provide said output frequency signal corresponding to said selected musical note in said selected octave; and

wherein the encoder comprises

a clock circuit for providing a pulsed scan clock signal;

a keyswitch matrix connected to the keyboard wherein the matrix includes columns and rows of conductors and a plurality of keyswitches, wherein each of the keyswitches is arrayed in the matrix for connecting the conductor of a given row to the conductor of a given column in response to said manipulation of a given key in the keyboard, and wherein the columns correspond to the notes in an octave and the rows correspond to a predetermined number of octaves;

a first counter connected to the clock circuit for counting the pulses in said scan clock signal to provide a count corresponding to said notes;

a second counter connected to the first counter for counting multiples of said number of notes in a octave to provide a count of said octaves;

a decoder connected to the rows of the keyswitch matrix and to the second counter for sequentially providing pulses in the rows of the keyswitch matrix corresponding to said octave count;

a multiplexer connected to the columns of the keyswitch matrix and to the first counter for scanning the columns of the keyswitch matrix at the rate of said scan clock signal to thereby provide a serial keyboard data signal including pulses provided from the keyswitch matrix in response to manipulation of the keys, wherein each pulse in said serial keyboard data signal corresponds to a selected musical note in a selected octave;

a memory connected to the first and second counters for receiving a digital scan address signal wherein the least significant bits are received from the first counter and correspond to the notes corresponding to the columns in the keyswitch matrix, and the most significant bits are received from the second counter and corresponds to said octaves corresponding to the rows in the keyswitch matrix; and

a control logic circuit including a logic gate that is enabled by a said pulse in said serial keyboard data signal for enabling the memory to store said scan address signal;

wherein the memory is connected to the note generator for providing said stored scan address signal to the note generator as said note address signal;

wherein the control logic circuit further includes

a busy signal generator coupled to the memory and responsive to said pulse in said serial keyboard data signal that enabled the memory to store said scan address signal, for generating a busy signal for so long as the key that was manipulated to provide said pulse continues to be manipulated; and

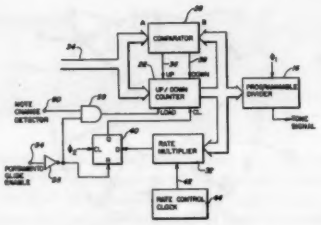
wherein the logic gate is inhibited by said busy signal from enabling the memory to store said scan address signal in response to a subsequent pulse in said serial keyboard data signal.

4,240,318

PORTAMENTO AND GLIDE TONE GENERATOR HAVING MULTIMODE CLOCK CIRCUIT

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Jul. 2, 1979, Ser. No. 53,791
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.01 24 Claims



1. In a musical instrument of the type having a tone generator operable in response to a clock signal for developing a tone signal having a frequency sweeping one or more musical intervals, the improvement comprising:

a rate control clock developing an output signal comprising a train of pulses having a constant repetition rate; and

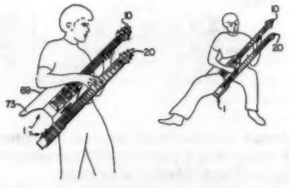
means responsive to said rate control clock and to said musical instrument for developing a clock signal for operating said tone generator, said clock signal having a repetition rate which varies exponentially with time at a rate determined according to the number of musical intervals to be swept by said tone signal.

4,240,319

ELECTRIC GUITARS

Charles C. Soupios, 69 Thomas Ave., Bethpage, N.Y. 11714

Filed Feb. 16, 1979, Ser. No. 12,791
Int. Cl.[3] G10D *1/08, 3/06*
U.S. Cl. 84—263 11 Claims

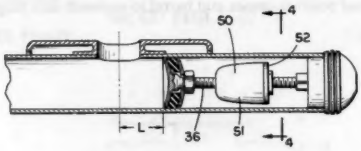


1. A multiple neck stringed musical instrument in the nature of an electric guitar adapted for two-voice play comprising a base member and a first and second stringed neck extending therefrom, said second neck extending from the base member parallel to the first neck, spaced apart therefrom, and offset laterally and longitudinally thereof whereby the played upon face of said second neck is positioned relative to the played upon face on said first neck for simultaneous independent play on each neck.

4,240,320
HEADJOINT STOPPER

James J. Pellerite, 109 N. Glenwood Ave. W., Bloomington, Ind. 47401

Continuation-in-part of Ser. No. 964,048, Nov. 27, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,371
Int. Cl.³ G01D 7/02
U.S. Cl. 84—384 17 Claims



1. A headjoint stopper for the headjoint of a flute, said headjoint stopper comprising:
- a bottom disc member having a concave embouchure-hole-facing side and a back side and having an external configuration sized to fit the inside of said headjoint with metal-to-metal contact around the entire circumference of said bottom disc member providing a seal between said headjoint and disc;
- a deformable sealing member positioned against said back side; and
- means for compressing said deformable sealing member against said back side whereby the thickness of said deformable sealing member is decreased while the perimeter length of said deformable sealing member is increased.

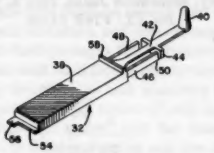
14. A headjoint stopper for the headjoint of a flute, said headjoint stopper comprising:
- a bottom disc member having a concave embouchure-hole-facing side and a back side and having an external configuration sized to fit the inside of said headjoint with metal-to-metal contact;
- a deformable sealing member positioned against said back side;
- means for compressing said deformable sealing member against said back side whereby the thickness of said deformable sealing member is descreased while the perimeter length of said deformable sealing member is increased;
- a crown fitting mounted on the headjoint so as to close off the end of the headjoint and define a chamber within said headjoint and between said headjoint stopper and said crown fitting;
- a stem attached to said bottom disc member and extending into said chamber; and
- a cork dampener mounted on said stem within said chamber and of sufficiently small size to be spaced from the headjoint.

4,240,321
KEYBOARD ASSEMBLY FOR TOY MUSICAL INSTRUMENTS

J. Melvyn Goldenberg, Upper Saddle River, N.J., assignor to Proll Molding Company, Bloomfield, N.J.

Division of Ser. No. 889,984, Mar. 24, 1978, Pat. No. 4,168,649. This application Jun. 1, 1979, Ser. No. 44,504
Int. Cl.³ G10C 3/12; G10D 13/08
U.S. Cl. 84—433 5 Claims

1. A key adapted to be used in a keyboard assembly of a toy musical instrument, said key comprising:
- (a) a key lever;
- (b) a hammer spaced from the key lever;
- (c) a flexible segment intermediate said key lever and said hammer;
- (d) means on said key lever adapted to secure the key in position within the instrument; and the invention comprising:
- (e) cooperating means defined between the flexible segment

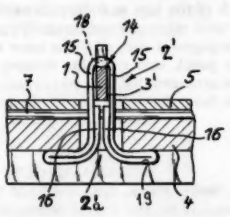


and said key lever for damping out reverberations of the hammer, said cooperating means including a stop bar formed on said flexible segment and a pair of rails projecting rearwardly from said key lever.

4,240,322
WEDGE-PIN FASTENER

Lothar Teske, Hegelstr. 1, 5000 Cologne, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,395
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 7740307[U]; May 20, 1978, 2822036
Int. Cl.³ F16B 19/02, 21/00
U.S. Cl. 85—7 9 Claims

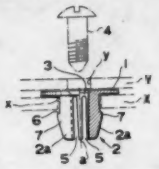


1. A fastener for joining a pair of elements, said fastener comprising:
- a fastener member having an elongated stem provided at one end with an enlarged head and formed spaced from said head with a transversely throughgoing passage, said fastener member being insertable through aligned holes in said elements with said head bearing on one of said elements and said passage exposed at the other of said elements, said fastener member being formed of a plastically deformed metal strip having a U-shaped central section and a pair of outwardly and oppositely bent legs, said central section having a bight and a pair of inner sides, said strip being bent back double at said legs and having free ends received within said U-shaped central section between said sides, said sides forming said passage with said free ends, and said bight and said legs forming said head; and
- a plastically deformable elongated wedge inserted through said passage and having an intermediate portion in said passage and a pair of end portions flanking said intermediate portion and both bent laterally out of line with said intermediate portion, said wedge further having one longitudinal edge bearing in one direction on said other element and another longitudinal edge bearing in the opposite direction on said stem in said passage and forming an acute angle with said one edge.

4,240,323
PLASTIC SCREW SOCKET

Masaharu Kojima, Toyoda, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Oct. 2, 1978, Ser. No. 947,372
Claims priority, application Japan, Oct. 8, 1977, 52-134772
Int. Cl.[3] F16B *13/06*
U.S. Cl. 85—80 2 Claims

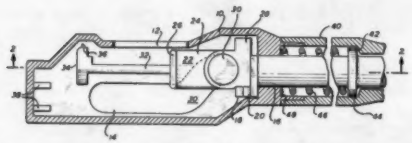


1. A plastic screw socket integrally comprising a flange designed to be brought into contact with one surface of a given panel and a leg extending perpendicularly from the lower surface of the flange and adapted to be inserted through a matched perforation provided in advance in the panel, said flange and said leg being provided with a through hole pierced vertically therethrough from the upper surface of the flange to the lower end of the leg, said leg being divided into two opposed segments by two substantially planar, parallel slits provided longitudinally therein on opposite sides of the center line of the through hole from the lower end of the leg upwardly to the vicinity of the flange, whereby insertion of a complementary screw having a diameter greater than the diameter of the through hole from above the flange into the through hole causes each of the legs to bulge outwardly and transversely relative to each other and consequently causing them to come into tight engagment with all of the inner walls of the perforation in the panel, said two slits forming said two opposed segments so arranged that they do not coincide with any of the radii drawn from the center line of the through hole.

4,240,324
AUTOMATIC GUN

William G. Smith, Burns, Ind., and Ladd Yuhash, Budd Lake, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1978, Ser. No. 955,811
Int. Cl.[3] F41D *5/02*
U.S. Cl. 89—156 9 Claims

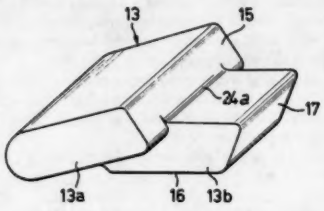


1. An automatic gun for firing a projectile by means of a separately loaded propellant case comprising:
- a receiving frame;
- an elongated barrel having a breech end transpierced by an axial bore, said barrel being mounted in said frame for reciprocation therein;
- resilient means for forwardly urging said barrel to a battery position; and
- a chamber member having a concavity shaped to hold said propellant case, said chamber member being slidably mounted on said breech end of said barrel, said chamber member being transversely displaceable from alignment with said axial bore to an unlocked position at which said concavity is accessible, said receiving frame including:
- actuating means for transversely displacing said chamber member from alignment with said axial bore to said unlocked position in response to said barrel recoiling;
- wherein said actuating means commences transverse displacement of said chamber member after said barrel recoils through an initial subinterval, and wherein said actuating means transversely displaces said chamber member to said unlocked position prior to the arrival of said barrel at a load position, said projectile being coaxially positionable behind said breech end so that further recoil from said load position causes said barrel to ensheath said projectile.

4,240,325
BREECHBLOCK FOR AN AUTOMATIC FIRING WEAPON

Ernst Hürlemann, Zürich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle, Zürich, Switzerland

Filed Oct. 30, 1978, Ser. No. 956,174
Claims priority, application Switzerland, Nov. 11, 1977, 13760/77
Int. Cl.[3] F41D *3/00*
U.S. Cl. 89—190 1 Claim

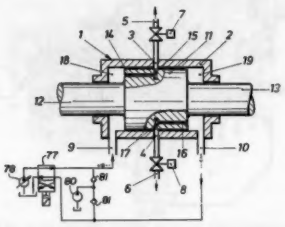


1. A breechblock for an automatic firing weapon, comprising:
- a breechblock housing;
- a breechblock body displaceably mounted in said breechblock housing;
- said breechblock body comprising a breechblock head and a control element;
- at least one locking element structured as a single-arm lever;
- said locking element being pivotably mounted at the breechblock head;
- said locking element having a locking surface and a support surface;
- said breechblock housing being provided with a latch surface;
- the locking surface of the locking element, in a forward firing position of the breechblock body, engaging with said latch surface of the breechblock housing and the support surface being engaged by the control element;
- said locking element having a front part containing the pivot axis of said locking element and a rear projection;
- said locking surface being provided at the front part and the support surface at the rear projection;
- the locking surface having a rear edge which is arranged in spaced relationship from and forwardly of the rear end of the support surface; and
- said front part of the locking element has a greater width than the rear projection.

4,240,326
HYDRAULIC VIBRATION EXCITER AND METHOD OF COOLING THEREOF

Udo Carle, Höhr-Grenzhausen, Fed. Rep. of Germany, assignor to Koehring GmbH - Bomag Division, Boppard, Fed. Rep. of Germany

Continuation of Ser. No. 769,925, Feb. 18, 1977, abandoned. This application Jun. 21, 1979, Ser. No. 50,782
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607190
Int. Cl.[3] F15B *21/02*
U.S. Cl. 91—39 7 Claims

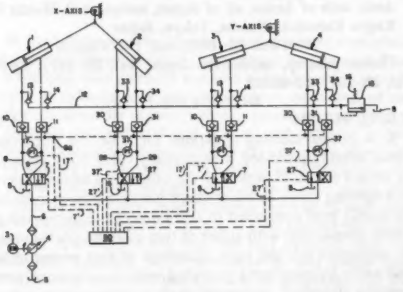


1. In a hydraulically operated vibration exciter for a vibratory compactor, which exciter includes a cylinder, a piston mounted in the cylinder for reciprocating movement therein and delimiting two cylinder chambers located at respectively opposite sides of the piston, a source of hydraulic fluid under pressure communicating with the chambers for causing a liquid column of variable volume to move to and fro between the source and each chamber, the source acting to produce a cyclic reversal in the direction of liquid flow between the source and each chamber and a cyclic variation in the pressure of the liquid between the source and each chamber, for causing the piston to undergo, relative to the cylinder, a reciprocating movement with a controllable stroke, the improvement comprising means for discharging from each chamber a quantity of heated hydraulic fluid proportional to the pressure in said chamber only when said piston is in the vicinity of the center of its stroke; and means for adding a corresponding quantity of fluid at a lower temperature to the fluid supplied by said source.

4,240,327
FLUID OPERATED LINEAR ACTUATOR CONTROL SYSTEM

Richard E. Held, Oil Springs, Ky., assignor to Harris Corporation, Cleveland, Ohio

Filed May 30, 1978, Ser. No. 910,343
Int. Cl.[3] F01B *15/00, 1/00*
U.S. Cl. 91—176 15 Claims



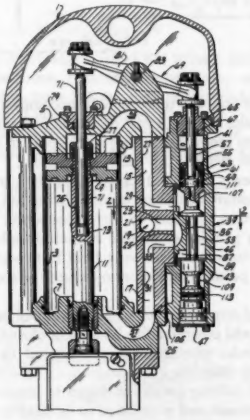
1. A fluid operated linear actuator control system for a drive arrangement of the type wherein two fluid operated linear actuators act upon a shaft at an angle with respect to each other for causing rotation thereof, comprising a pair of fluid operated linear actuators,

a fluid pressure source including a reservoir, fluid passages connecting the fluid pressure source with each of the fluid operated linear actuators, and control means connected in each of said fluid passages for communicating a first of said actuators with fluid from said pressure source and for deactivating the other of said actuators to displace said drive arrangement under action of only said first actuator through a first arc sector, and for changing-over said communication for deactivating said one actuator and for communicating said other actuator with fluid from said pressure source causing displacement of the drive arrangement through a second arc sector, under action of only said other actuator whereby one of said actuators is in a driving mode while the other actuator is in a floating mode, and means in communication with the pressure of fluid flow into and out of each of said linear actuators and operable, when a linear actuator is in a floating mode, for adjusting fluid flows to and from a deactivated linear actuator in a manner acting to equalize fluid pressures to which opposite sides of the deactivated linear actuator are exposed.

4,240,328
VALVE MECHANISM FOR A HYDRAULIC EXPANSIBLE CHAMBER MOTOR

Jerome B. Wegmann, St. Louis County, and Jeffrey M. Kotyk, St. Louis, both of Mo., assignors to McNeil Corporation, Akron, Ohio

Filed Mar. 19, 1979, Ser. No. 21,592
Int. Cl.[3] F01L *25/06, 23/00*
U.S. Cl. 91—287 5 Claims



1. Hydraulic valve mechanism for an expansible chamber hydraulic motor comprising a cylinder having therein a motor piston on a piston rod, said valve mechanism comprising a block having a valve face and an exhaust passage from a central main exhaust port in said face, and feed passages extending from main feed ports in said face on opposite sides of said exhaust port to the opposite ends of the cylinder, a valve chest secured in sealed relation overlying the face, said valve chest having aligned piston-receiving bores at its opposite ends with a chamber for pressurized hydraulic fluid between the bores, the outer ends of the bores being closed, a valve-actuating piston on a valve-actuating piston rod slidable at its ends in the bores, a main D-valve and an auxiliary D-valve connected

with the valve-actuating piston slidable on said face within the valve chest, said block having a central auxiliary exhaust port and auxiliary feed ports in said face with said auxiliary feed ports in the line of motion of the auxiliary D-valve on opposite sides of the auxiliary exhaust port, said block further including passages connecting the auxiliary feed ports and the ends of said bores, and means connecting the motor piston rod with the valve-actuating piston rod, said auxiliary D-valve having a surface in sliding sealing engagement with said valve face and a recess in said surface for the flow of hydraulic fluid therethrough from either one of the auxiliary feed ports to the auxiliary exhaust port, said surface and recess being so formed in relation to the feed ports that the auxiliary D-valve does not completely block hydraulic fluid flow through either one of the auxiliary feed ports at any position along its line of motion, thereby preventing hydraulic lock.

4,240,329

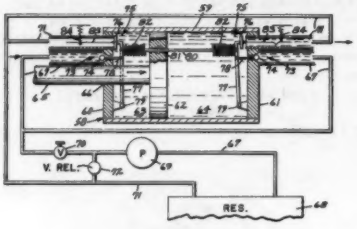
FLUID PRESSURE SERVO DETENT MECHANISM

Harold G. Inhofer, Hopkins, and James J. Kriz, Jr., Minneapolis, both of Minn., assignors to Proteus Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 825,687, Aug. 18, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,305

Int. Cl.³ F01L *23/00*

U.S. Cl. 91—342 **3 Claims**



1. A fluid pressure servo detent mechanism including:

a. a cylinder having a pair of closed end walls;

b. a piston moveable within said cylinder and providing a pressure chamber on each side thereof;

c. inlet means for introducing fluid under pressure to each of said pressure chambers to provide motion to said piston in a direction opposite to the introduction of fluid and to thereby provide expansion of such chamber;

d. outlet means for receiving fluid from each of said shambers to permit said piston to reduce the size of such chamber;

e. first valving means arranged to control each of said inlet means and positioned to be held in closed position by the fluid under pressure being delivered to the respective pressure chamber;

f. second valving means arranged to control each of said outlet means and positioned to be held in closed position by the pressure of the fluid within the respective pressure chamber;

g. link means interconnecting each of such first and second valving means whereby said first valving means of each pressure chamber is shifted to an open position when said second valving means of each pressure chamber is shifted to a closed position and said first valving means of each pressure chamber is shifted to a closed position when said second valving means of each pressure chamber is shifted to an open position; and

h. actuator means interconnecting said link means for shifting thereof to simultaneously deliver fluid under pressure to one of said pressure chambers while exhausting fluid from the other of said chambers.

4,240,330

SERVO BOOSTER ASSEMBLIES

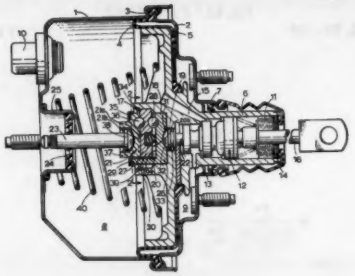
Glyn P. R. Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Filed Jun. 12, 1978, Ser. No. 914,926

Claims priority, application United Kingdom, Jun. 11, 1977, 24462/77; Jun. 22, 1977, 26052/77

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 R **14 Claims**



1. A servo booster assembly for a vehicle braking system comprising a housing, an axially movable wall located in said housing, valve means controlling a fluid pressure differential applied to said movable wall, an axially movable input member adapted to be connected to a foot pedal, an axially movable output member, a first thrust assembly interposed between said input member and said output member for transmitting force from said input member to said output member, a second thrust assembly interposed between said movable wall and said output member for transmitting force from said movable wall to said output member, each thrust assembly comprising: a pair of confronting, relatively angularly movable and axially displaceable cam walls lying in planes normal to the axes of said input and output members and each having inclined circumferentially extending ramp surfaces thereon, and bearing elements located between said cam walls and engaging with said ramp surfaces; said booster assembly further comprising: means for holding one of said cam walls of said first thrust assembly against angular movement relative to one of the cam walls of the second thrust assembly and means for holding the other cam wall of said first thrust assembly against angular movement relative to the other cam wall of the second thrust assembly.

4,240,331

POWER STEERING APPARATUS FOR VEHICLE

Masao Nishikawa, Niiza; Yoshihiko Toshimitsu, and Takashi Aoki, both of Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1978, Ser. No. 928,076

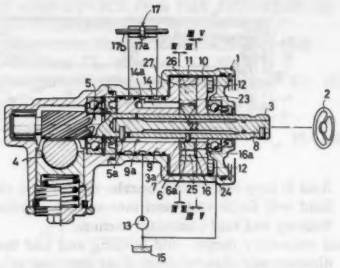
Claims priority, application Japan, Jul. 29, 1977, 52-90261; Jul. 29, 1977, 52-90262

Int. Cl.³ F15B *13/14*

U.S. Cl. 91—434 **1 Claim**

1. A power steering apparatus for a vehicle comprising a valve housing provided with a rotary valve body arranged to be turned in one direction or the other by a turning operation of a steering shaft; an oil pressure pump; a power cylinder; an oil supply port connected to said oil pressure pump and selectively connectible with either of two cylinder ports connected to respective left and right chambers of said power cylinder; said valve housing being provided with an arcuate oil pressure reaction chamber, an intermediate partition plate extending from said valve body into said oil pressure reaction chamber to divide said chamber into two areas, each of said areas of said chamber extending on one side and the other of said plate in

the turning direction of said valve body and being in respective communication with said cylinder ports, said partition plate dividing said chamber so that said areas are equal in a neutral position of said valve body in said housing, said partition plate tuning with said valve body from said neutral position to travel in said oil pressure reaction chamber during a steering operation to decrease the area on one side of the chamber while



increasing the area on the other side of the chamber, the area of the reaction chamber which is decreased by the movement of said valve body and the plate therewith being connected to the cylinder port which is placed into communication with the supply port and thereby pressurized whereas said other area of the reaction chamber is connected to tank and depressurized whereby a differential pressure is established on said plate urging the valve body to return to its initial position.

4,240,332

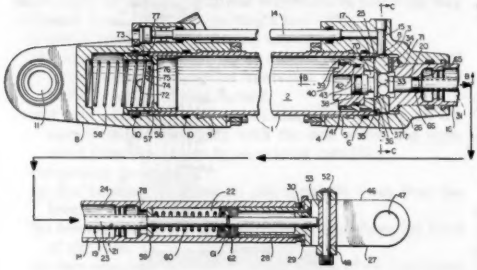
FLUID OPERATED LOCKING ACTUATOR

Edward J. Deutsch, Bellmore, N.Y., assignor to Arkwin Industries, Inc., Westbury, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,788

Int. Cl.³ F01B *25/26*

U.S. Cl. 92—5 L **9 Claims**



1. A fluid pressure actuator and locking means comprising an elongated hollow cylinder, said cylinder having a head end and a rod end, said cylinder rod end being beveled conically outward, a cylinder end cap received on each end of said cylinder, an inwardly opening annular recess between the rod end cylinder cap and said rod end of said cylinder, a fluid pressure port in said rod end cylinder cap communicating with said cylinder, a piston comprising a piston head and piston rod, said piston head being slidably received in said cylinder, sealing means on said piston head engaging the wall of said cylinder in fluid-tight relationship, a central axial passageway in said piston rod opening toward said rod end cylinder cap, dual diametrically opposed radial apertures in said piston head communicating with said passageway, an unlocking rod slidably received in said passageway, sealing means on said unlocking rod engaging the wall of said passageway in fluid-tight relationship, resilient means for biasing said unlocking rod in an outward direction from said rod end of said cylinder when said piston is in the extend position, a locking detent slidably disposed in each of said radial apertures, each of said locking detents being chamfered on its outer end for engaging the beveled rod end surface of said cylinder and being provided with a camming surface at its inner end, said camming surface having an essentially flat portion and a sloped portion, said sloped portion being nearest to said head end of said cylinder, a cage at the inner end of said unlocking rod, two rollers held in alignment normal to the center line of the piston by said cage but being unrestrained radially by said cage or unlocking rod, each said roller engaging a said camming surface as each of said detents moves, whereby with said main piston in the extend position, said detents will be cammed outwardly into said annular recess and locked in position by said rollers to lock said piston against movement and upon admission of retract fluid pressure to said rod end of said cylinder, said unlocking rod drives said rollers out of their locking position and permits said cylinder rod end to cam said detents in and unlock said piston;

said cage being provided with a central axial rod extension having a diameter greater than that of said unlocking rod and said piston head being provided with a central axial bore, said rod extension being slidably received in said bore and sealing means on said rod extension engaging the walls of said bore in a fluid-tight relationship;

said central axial passageway in said piston rod comprising an inner passageway having a diameter smaller than that of said bore receiving said rod extension, the wall of which engages said sealing means on said unlocking rod, and an outer passageway, a first central axial guide member secured within said outer passageway at its inner end, a second central axial guide spaced outwardly from said first central axial guide and secured to said unlocking rod; and

said resilient means comprising a spring contained in compression between said first and second central axial guides.

4,240,333

HYDROSTATICALLY DRIVEN ROAD ROLLERS

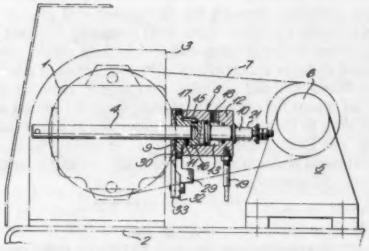
Terence R. Heathcote, Holcombe, near Bath, and Ralph G. Jefferies, Bitton, near Bristol, both of England, assignors to Stothert & Pitt Limited, Somerset, England

Filed Jul. 31, 1979, Ser. No. 62,336

Claims priority, application United Kingdom, Sep. 25, 1978, 37998/78

Int. Cl.³ F01B *3/02*; F04B *1/26*

U.S. Cl. 92—12.2 **8 Claims**



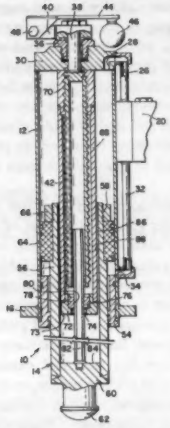
1. A hydrostatically driven road roller which includes a variable displacement swash plate pump having a swash plate control shaft connected to a manual control lever, and a dead man's handle which controls pressurization of the fluid in the fluid system, wherein said connection between said swash plate control shaft and said manual control lever includes a disconnectible device which is adapted automatically to cause said manual control lever to become ineffective when said dead man's handle is in an inoperative position.

4,240,334

MECHANICALLY LOCKABLE HYDRAULIC CYLINDER JACK

Jeffrey A. Crosser, Hampton, Iowa, assignor to United Hydraulics Corporation, Hampton, Iowa

Filed Dec. 28, 1977, Ser. No. 865,029
Int. Cl.[3] F15B 15/26
U.S. Cl. 92—23 8 Claims



1. In a hydraulic jack comprising a cylinder and a piston rod assembly movable between a first retracted position and a second extended position relative to said cylinder, means for preventing rotation of the piston rod assembly, means for maintaining said piston rod assembly locked in said second extended position comprising a rotatable shaft extending into said cylinder, locking means operatively coupled to said shaft and movable into engagement with said piston rod assembly in response to rotation of said shaft to thereby lock said piston rod assembly in its second extended position, said locking means being adapted to reinforce said piston rod assembly in said second extended position substantially along said piston rod assembly's entire length, said cylinder including a first closed end and a second open end through which said piston rod assembly is movable, and said locking means is movable into engagement with at least a portion of said piston rod assembly located beyond the second open end of said cylinder when said piston rod assembly is in said second extended position, said shaft extending through the first closed end of said cylinder and wherein a portion of the shaft extending into said cylinder has thread means thereon and said locking means comprises a second cylinder concentrically disposed between said shaft and said first-mentioned cylinder, said second cylinder including thread means for cooperatively engaging the thread means on said shaft to lock the piston rod assembly in its extended position. The locking means reinforces the piston rod assembly in its extended position along substantially the entire length of the piston rod assembly.

4,240,335

FLOATING SEAL FOR FLUIDIC DEVICES

Edward P. Stucka, Deerfield, and Harald G. Trautmann, Glen Ellyn, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

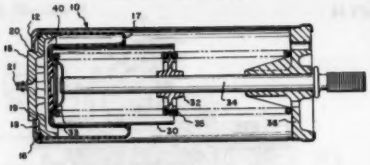
Continuation of Ser. No. 882,685, Mar. 2, 1978, abandoned. This application Dec. 13, 1979, Ser. No. 103,246
Int. Cl.[3] F16J 3/02
U.S. Cl. 92—96 16 Claims

1. A fluidic device comprising:

a housing;

connector means mounted within said housing in a manner to provide a clearance therebetween, said connector means having a nozzle exteriorly of said housing; and,

a diaphragm mounted within said housing and having a bead around the circumference of one end of said diaphragm, said bead positioned within said clearance between said connector means and said housing to form an expandable fluid chamber with said connector means, such that when



fluid is supplied to said nozzle, and to said chamber, the fluid will force said bead into sealing relation with said housing and said connector means,

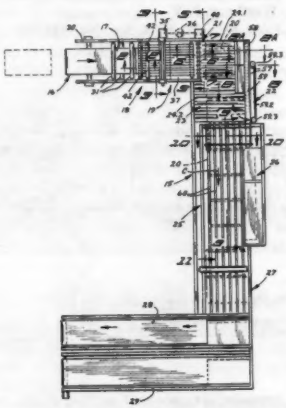
said connector means, said housing and said bead being so dimensioned that, without fluid supplied to said nozzle, said connector means and said diaphragm with said bead are floating with respect to said housing.

4,240,336

BAG MAKING MACHINE

John J. Grevich, Star Prairie, and Stanley D. Denker, New Richmond, both of Wis., assignors to Nordson Corporation, Amherst, Ohio

Filed Jul. 13, 1978, Ser. No. 924,133
Int. Cl.[3] B31B 1/16
U.S. Cl. 493—196 17 Claims



1. A machine for severing and manipulating tube segments from a continuous supply of film tube stock, comprising

a pair of continuously operating feed rolls on horizontal axes and adjoining each other to clamp, draw and feed the tube stock from the supply,

a horizontal belt conveyor adjacent said feed rolls to receive and carry the tube stock in horizontally laid out condition from the feed rolls and traveling at a speed no less than the speed of said feed rolls, the conveyor having tube stock support means at a multiplicity of locations across the width of the belt conveyor,

a cyclically operating cutting means located along and intermediate the ends of said belt conveyor and traversing a substantial portion of the width of the belt conveyor, the cutting means at once cutting transversely across the entire width of the tube stock to cut off tube segments

while allowing the tube stock and tube segments to continue to travel along the belt conveyor at the speed of the belt conveyor, and

a crossfeed conveyor adjacent the delivery end of the belt and conveyor and receiving the tube segments therefrom.

4,240,337

PROCESS AND DEVICE FOR THE ERECTION OF CARDBOARD TRAYS

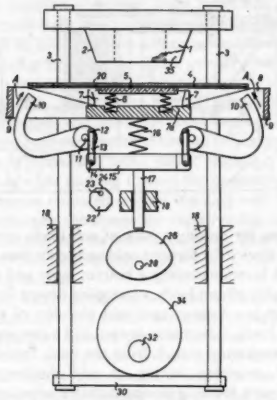
Toni Casutt, Blumenrain 24, 8702 Zollikon, Switzerland

Filed Aug. 17, 1978, Ser. No. 934,471

Claims priority, application Switzerland, Aug. 17, 1977, 10107/77

Int. Cl.³ B31B *1/50*

U.S. Cl. 493—137 **10 Claims**



1. Method for mechanical erection of a cardboard tray, particularly for holding fruits and vegetables, in which the tray is formed from a flat blank having a base (36),

a pair of parallel side walls (38) connected to the base,

two tongues (40) each having an insertion slit (47) connected to the base and positioned transverse with respect to said walls, one at each end thereof,

and two edge parts (45) surrounding the tongues on the outside thereof, merging with the side walls, and separated from the tongue by separating cuts (43);

comprising the steps of

(a) first bending the sidewalls (38) angularly away from the level of the base (36);

(b) bending the tongues (40) angularly away from the level of the base;

(c) then engaging the central portions (50') of the edge parts (45) with mechanical fingers (10) to fold said central portions and form double ply insertion parts (50) with the mechanical fingers between the plies of the respective insertion parts;

(d) introducing the insertion parts, with the fingers therebetween, into the slits (47) of the raised tongues;

(e) and withdrawing said fingers (10) from between the plies of the insertion parts (50), said insertion parts remaining locked in said slits.

3. Apparatus for the mechanical erection of a cardboard tray, particularly for holding fruits and vegetables, from a flat blank having a base (36),

a pair of parallel side walls (38) connected to the base,

two tongs (40) each having an insertion slit (47) connected to the base and positioned transverse with respect to said walls, one at each end thereof,

and two edge parts (45) surrounding the tongues on the outside thereof, merging with the side walls, and separated from the tongue by separating cuts (43)

comprising in accordance with the invention a frame (18);

a die (1) movably mounted in the frame;

a matrix (7) provided beneath said die and a supporting plate (5) provided on said matrix;

two movable fingers means (10) mounted below said matrix;

and die moving means (30, 32, 34) to effect relative movement between the die (1) and the matrix (7),

wherein said fingers means are located oppositely from each other and positioned with respect to the edge parts (45) of the blank to engage the central portion (50') of the edge parts;

the die drive means moving the die (1) against said blank (4) to push the blank against the matrix and thus bend the sidewalls (38) and the tongue (40) with respect to the matrix to form said tray with raised side walls and end tongues;

and said finger drive means (26, 28) are synchronized with the die drive means (30, 32, 34) to then move the fingers means in engagement direction with respect to the central portions (50') of said edge parts and thereby fold said edge parts centrally into double-ply configuration with the fingers means therebetween, said finger drive means continuing control of movement of said fingers means in a direction towards the slit (47) on the raised tongues.

4,240,338

CITRUS JUICER ATTACHMENT FOR FOOD PROCESSOR

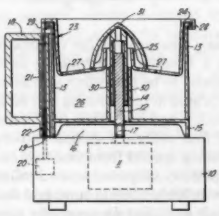
John W. McClean, Lakemba, Australia, assignor to Breville Holdings Pty. Limited, Pyrmont, Australia

Filed Aug. 1, 1979, Ser. No. 62,739

Claims priority, application Australia, Aug. 25, 1978, PD5664/78

Int. Cl.³ A23N *1/00*

U.S. Cl. 99—501 **8 Claims**



1. A food processor consisting of a base containing an electric driving motor and electric switch means for controlling the operation of said driving motor, an aperture in the upper surface of said base through which a driving shaft from said motor projects, a substantially cylindrical food processing container open at its upper end, complementary means on said base and said container whereby said container is removably attached to the upper surface of said base with the driving motor shaft projecting through the hole in the base of the container, a sleeve in said container surrounding said hole and projecting upwardly into the container to form an annular liquid containing well around said hole, externally accessible means on said base associated with said electric switch means, characterized in that there is provided an annular trough like member fitting within said container, a circumferential flange of said trough like member resting on the upper edge of the container and supporting the member within the container, a central hole in said member fitting over said sleeve, apertures in the bottom of said member constructed to permit the passage of the juice of citrus fruit while acting to restrain the passage of pulp and pips associated therewith, means on said member arranged to cooperate with said externally accessible means and said electric switch means so that said electric switch means can be actuated only if said container is attached to said

base and said annular trough like member is in a predetermined rotational relationship with said container, complementary means on the flange of the annular member and the container acting to hold the member to the container when in said relationship, a hollow stem extending through the central hole of the said annular member and making driving connection with the motor shaft and a domed ribbed citrus juice extracting member on the upper end of said shaft said domed citrus juice extracting member covering the central hole in the bottom of the member.

4,240,339

BALE PRESSING ARRANGEMENT FOR CARDBOARD WASTES

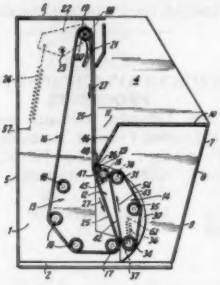
Jürgen Simonis, Wolfenbüttel, Fed. Rep. of Germany, assignor to Gebrüder Welger, Wolfenbüttel, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,082

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809887

Int. Cl.³ B65B *13/20*

U.S. Cl. 100—5 **33 Claims**



1. Bale pressing arrangement for cardboard waste and the like comprising a housing, said housing having an inlet for introducing material to be baled into said housing, a first conveyor belt unit located in said housing and including a plurality of spaced first rollers and an endless first conveyor belt traveling around said first rollers, a second conveyor belt unit located in said housing spaced from said first conveyor belt unit and including a pluraity of spaced second rollers and an endless second conveyor belt traveling around said second rollers, said first conveyor belt including an upwardly extending first portion, said second conveyor belt including an upwardly extending second portion with the surface of said second portion facing toward and spaced from the surface of said first portion of said first conveyor belt and forming therebetween a press chamber, means for driving said first and second conveyor belts so that said first portion and second portion forming said press chamber travel in opposite directions, said first conveyor belt supported by said first rollers and said second conveyor belt supported by said second rollers so that the first portion of said first conveyor belt and the second portion of said second conveyor belt move away from each other in the direction transverse to the direction of movement of said first and second conveyor belts for increasing the volume of said press chamber as the amount of waste material introduced into said press chamber is increased, said press chamber having a first end and a second end with the ends extending transversely of the direction of movement of said first and second belt conveyors and said first end spaced upwardly from said second end, at said first end said first and second belt conveyors being disposed in spaced relation and at least said first belt conveyor forming one side of an inlet opening for introducing the waste material into said press chamber at said first end thereof, said first conveyor belt extending generally upwardly from said inlet opening at said first end of said press chamber and forming a continuation of said first portion thereof, and means in combination with said continuation of said first portion forming an inlet chamber for supplying the material to be baled downwardly through said inlet opening into said first end of said press chamber.

4,240,340

APPARATUS FOR FORMING AND STRAPPING A PACK

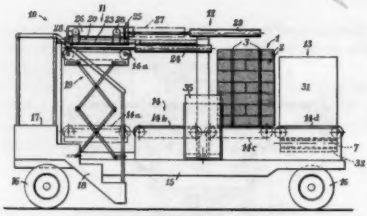
Michel Roy, Paris, France, assignor to LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance, Paris, France

Division of Ser. No. 953,179, Oct. 20, 1978. This application Jul. 11, 1979, Ser. No. 56,618

Claims priority, application France, Oct. 28, 1977, 77 32684

Int. Cl.³ B65B *13/18*

U.S. Cl. 100—7 **4 Claims**



1. A machine for making a pack of unit loads, comprising a pack forming device for forming said unit loads into a plurality of superposed layers including a bottom layer and each layer having a plurality of unit loads, a strapping device for setting at least one strap in a loop around said plurality of superposed layers of unit loads, a discharge station and a conveyor system capable of transferring a pack from the pack forming device through said strapping device to said discharge station, wherein said pack forming device includes retractable means for positioning the unit loads of the bottom layer of the pack being formed, said retractable positioning means being capable when in an operative non-retracted position, to provide in the bottom layer of the pack being formed at least one free space of predetermined width and elongated configuration extending parallel to the axis of the loop formed by said at least one strap, and wherein said strapping device is so adjusted to set said at least one strap around the pack with a low tension.

4,240,341

CAN CRUSHER

Robert L. Whipple, P.O. Box 108, Camino, Calif. 95709, and William F. Warren, Orangevale, Calif., assignors to Robert Whipple, Camino, Calif.

Continuation-in-part of Ser. No. 689,257, May 24, 1976, abandoned. This application Dec. 6, 1978, Ser. No. 966,970

Int. Cl.³ B30B *1/18, 9/32*

U.S. Cl. 100—49 **10 Claims**

1. A can crusher comprising:

a pair of opposed fixed walls;

laterally reciprocal mashing head means reciprocable relative to said opposed fixed walls;

means for reciprocating said reciprocal head means between said opposed fixed walls;

fixed support means for supporting a single can lengthwise between said opposed fixed walls, said support means extending laterally between said fixed walls, a distance from a midpoint of said support means to a fixed wall being greater than half the lateral extent of said support means by a predetermined amount, said predetermined amount being greater than the length of a crushed can, and said support means being fixed relative to said fixed walls and disposed beneath said reciprocal mashing head means;

can stacking and feeding means for stacking cans in a vertical row and for feeding cans one at a time to said reciprocal mashing head means, which can stacking and feeding means includes a vertical chute positioned adjacent said reciprocal head means which chute is only sized wide enough to accommodate a one-can width wide column of cans, and which vertical chute gravity feeds one can at a time to said mashing head means where a side wall of said can slidingly engages the mashing head means, said can falling lengthwise onto said fixed support means as said mashing head means moves toward either one of said fixed walls, said mashing head means engaging and crushing said can upon moving toward the opposite wall;

switch means mounted on said stacking and feeding means for activating the means for reciprocating said reciprocal head means, said switch means being adapted for activation by the impingement of a can in said stacking and feeding means;

said fixed walls having flat and parallel confronting faces;

said reciprocal head means including a single head having two opposed flat and parallel faces, each of said faces in said head being parallel to the faces of said fixed walls;

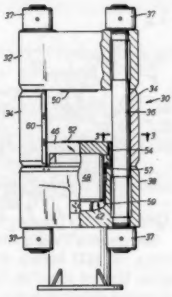
said head engaging confronting rims of a can to apply axial pressure to crush the side walls of a can between one face of said head and one of said fixed walls.

4,240,342

FRAME STRUCTURE FOR A PRESS ASSEMBLY

Philip T. Delmer, Shorewood, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Jun. 18, 1979, Ser. No. 49,030
Int. Cl.³ B30B *15/04*
U.S. Cl. 100—53 **8 Claims**



1. Assembly for high pressure compacting comprising:

(a) a frame structure having a pair of resistance members spaced apart from each other, a plurality of tying members each under a predetermined stress in tension and a plurality of members associated with said tying members each under a predetermined compressive load, said tying and associated compression members securing said resistance members in the spaced apart relationship;

(b) a force means comprising a movable platen located on a central vertical axis of the assembly between said tying members and guided on the inner facing surface of the tying members; and

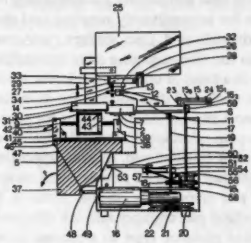
(c) means connected to one of said resistance members for moving said platen.

4,240,343

AUTOMATIC MACHINE FOR SERIGRAPHIC PRINTING

Jacques Monvoisin, Paris, France, assignor to Tecal S.A.R.L., France

Continuation-in-part of Ser. No. 850,506, Oct. 11, 1977, abandoned. This application May 1, 1979, Ser. No. 35,133
Claims priority, application France, Nov. 15, 1976, 76 34261
Int. Cl.³ B41F *15/08, 15/30, 15/42*
U.S. Cl. 101—38 R **4 Claims**



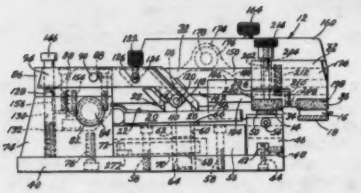
1. An automatic machine for serigraphic printing on circular articles, said machine comprising in combination: a frame structure; a slide-bar longitudinally extending in the said frame structure; screen support means mounted for reciprocating translation on said slide-bar; means for reciprocatingly moving said screen support means; a printing screen located on said screen support means; a squeegee above said screen; first means for lowering and lifting said squeegee above said screen into and out of contact, respectively, with the upper side of said screen; an article holder arranged below said screen and second means for lifting and lowering said holder for bringing said article into and out of contact, respectively, with the underside of said screen; a guide rod integrally mounted on said screen support means parallel to the said slide-bar; and first and second support members adjustably positioned on said guide rod, first and second fingers respectively mounted integral with said first and second support members, said first and second fingers being parallel to the screen and at right angles with the guide rod, said means for reciprocatingly moving said screen support means comprising motor means having an output shaft, crank and link means connected to the screen support means and gear means connecting the said output shaft to said crank and link means, said first means including an oscillating arm having one end connected to said squeegee and another end where the said oscillating arm is pivotally mounted with respect to the frame structure, said first means further including a pin fixedly mounted on the frame structure at right angles with the screen, a supporting member pivotally mounted on said pin, a camming member and a third finger being secured to said supporting member, said third finger being arranged parallel to said pin and across said guide rod for alternate engagement of said third finger with the first and second fingers, the said camming member being located for engaging the said oscillating arm and arranged for raising the said oscillating arm when the first finger is engaged by the third finger and for lowering the said oscillating arm when the second finger is engaged by the third finger.

4,240,344

HIGH SPEED UNIT PRINTER AND INKER THEREFOR

Ruslon J. Smith, Moscow, Pa., assignor to Equipment Technology Incorporated, Peckville, Pa.

Filed Sep. 6, 1979, Ser. No. 73,091
Int. Cl.[3] B41F 17/00
U.S. Cl. 101—44 14 Claims



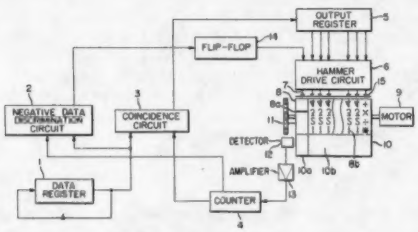
1. A high speed unit printer comprising a base, an ink disc mounted on said base and having a substantially horizontal disc surface, means for intermittently rotating said disc, a metering blade engaged with said disc surface, said metering blade having a slot in the disc-engaging edge thereof through which ink is metered in a band of uniform thickness, a collecting blade in engagement with said disc surface for diverting ink on said disc surface into a narrow stream, means for supporting a plate or type in a face-up relation adjacent said disc, a resilient inking pad and a resilient transfer pad, means supporting said inking pad and transfer pad in spaced relation, and means for cyclicly moving said pad supporting means from a first position wherein said inking pad engages said ink disc and said transfer pad engages said plate or type to a second position wherein said inking pad engages said plate or type and said transfer pad engages an article to be marked.

4,240,345

SELECTIVE DRUM PRINTER WITH AXIALLY DIVIDED MULTICOLOR INK ROLLER

Hiroshi Kyogoku, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 852,537, Nov. 17, 1977, abandoned, Continuation of Ser. No. 693,484, Jun. 7, 1976, abandoned. This application Mar. 23, 1979, Ser. No. 23,275
Claims priority, application Japan, Jun. 19, 1975, 50/74760
Int. Cl.[3] B41J 27/00
U.S. Cl. 101—103 4 Claims



1. A printing device, comprising in combination:

(a) a character type wheel provided with a plurality of character type rings, each of which is disposed along a shaft of said character type wheel, and in which a first character type symbol for printing a mark of a particular information among a plurality of informations to be printed is arranged on one of said plurality of character rings, and a second character type symbol is arranged on the remaining character type rings for printing said plurality of informations on a printing medium;

(b) hammer means to strike said character type wheel;

(c) ink roller means including, in coaxial disposition, a first color and a second ink roller portion impregnated with ink of a second color, said first ink roller portion facing the character type ring having said first character symbol thereon, and said second ink roller portion facing the remaining character type rings;

(d) memory means capable of storing therein discriminating information to discriminate between said particular information among said plurality of informations, and one of said plurality of informations;

(e) control means to read out the contents stored in said memory means, said control means being operative in response to the position of said first character type symbol on said character type wheel and a position of said second character type symbol;

(f) a first memory to store therein said discriminating information read out of said memory means by said control means, when said particular information in said plurality of informations and said dicriminating information are stored in said memory means;

(g) a second memory to store therein said particular information read out of said memory means by said control means, when said particular information in said plurality of informations and said discriminating information are stored in said memory means; and

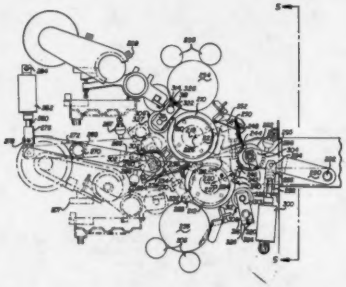
(h) drive means connected with said first and second memories, for striking said first character type symbol charged with said first color ink of said first ink roller portion on said ink roller means through said recording medium in response to said particular information stored in said first memory, and for striking said second character type symbol charged with said second color ink of said second ink roller portion on said ink roller means through said recording medium.

4,240,346

WEB PRINTING PRESS

Earl M. Landis, Sagamore Hills, Ohio; Webster C. Roberts, Noank, and James N. Crum, Stonington, both of Conn., assignors to Harris Corporation, Cleveland, Ohio

Continuation of Ser. No. 780,320, Mar. 23, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,213
Int. Cl.[3] B41F 7/04, 7/12, 7/40, 13/36, 31/30, 13/54
U.S. Cl. 101—139 18 Claims



1. A web printing press comprising a plurality of printing units arranged in tandem; each of said printing units having a pair of blanket cylinders defining a printing nip therebetween, a plate cylinder associated with each blanket cylinder so as to define an offset printing arrangement, means for moving said blanket cylinders between thrown-on and thrown-off positions for printing and not printing on a web moving through the nip, dampeners for applying dampening solution to plates on said

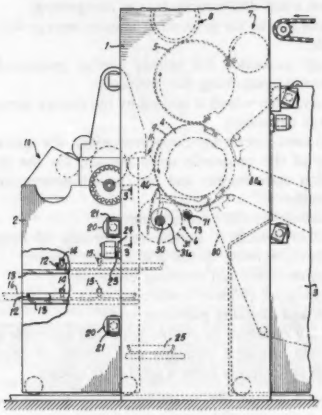
plate cylinders, inkers for applying ink to plates on said plate cylinders, and a drive motor for driving at least the blanket and plate cylinders of that unit independently of the driving of other said printing units; means for guiding the web through the nips of plural units with the blanket cylinders of at least one unit in their thrown-on position printing on the web and the blanket cylinders of another unit in their thrown-off position; and control circuit means for throwing said blanket cylinders of said another unit into printing position in timed relation to throwing said blanket cylinders of said at least one unit off while the web moves through the nips of said units, said control circuit means including means for controlling driving of the drive motor of said another unit for driving said blanket cylinders and plate cylinders of said another unit up to speed, means for controlling driving of said dampeners and inkers of said another unit to apply dampening solution and ink to the plate cylinders associated with said another unit prior to throwing said another unit on said at least one unit off.

4,240,347

BANKNOTE INTAGLIO PRINTING PRESS

Robert H. Hazelton, Bronx, and John J. Kimball, Huntington Station, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,903
Int. Cl.³ B41F *9/10*
U.S. Cl. 101—153 **17 Claims**



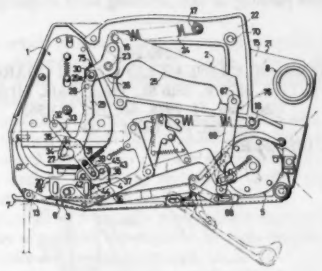
1. A bank note intaglio printing press, comprising:
a. a main frame (1) supporting:
   1. a plate cylinder (4);
   2. an impression cylinder (5) cooperating with said plate cylinder;
   3. a scraper blade (46) cooperating with said plate cylinder;
b. a first auxiliary carriage (2) supporting:
   1. an ink reservoir (10);
   2. an ink supply means (11) for transferring ink from the reservoir to the plate cylinder; and
   3. ink receptacle means (12) for receiving ink removed from the plate cylinder by said scraper;
   4. said carriage being movable between an operating position in which the ink supply means engages the plate cylinder and a retracted position in which the ink supply means is spaced from the plate cylinder; and
c. a second auxiliary carriage (3) supporting:
   1. a wiping web (80);
   2. supply and take-up reels (81,90) for the web;
   3. a wiping bar (86) for guiding the web in contact with the cylinder;
   4. separate pressure setting means (124,130) for each end of the bar; and
   5. adjustable stroke motor means (98,100) for advancing the web as the gap on the cylinder passes the bar;
   6. said second carriage being movable between an operating position in which the web engages the cylinder and a retracted position in which the web is spaced from the cylinder without disturbing either a pressure setting for an end of the bar or the length of said stroke.

4,240,348

INK SUPPLY DEVICES FOR PORTABLE LABELING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 716,934, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 681,251, Apr. 28, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,626
Claims priority, application Japan, Sep. 12, 1975, 50-109929; Oct. 7, 1975, 50-120292; Dec. 20, 1975, 50-151236; Dec. 25, 1975, 50-154012; Feb. 5, 1976, 51-010852
Int. Cl.³ B41F *1/50*; B41K *1/42*
U.S. Cl. 101—295 **44 Claims**



1. An inking device for a labeling machine which prints labels;
said labeling machine comprising:
a frame; a printing head in said frame; at least one row of types in said printing head; said types facing toward a print positon;
means for moving said printing head toward and away from a label, whereby said types may contact the label when said types have been moved to the label;
an actuating lever movably connected to said frame to operate said labeling machine;
a yoke attached to said actuating lever and extending toward said printing head; said yoke being movable with said actuating lever; said printing head being secured to said yoke for movement therewith; said yoke having an end surface thereof facing generally in said print direction; through said yoke, said actuating lever being connected to said printing head for moving said printing head toward and away from a label;
said inking device comprising:
an inking roller; support and moving means for moving said inking roller across said types as said printing head moves toward the label and while the label is not in contact with said types;
inking roller guide means comprising a fixedly positioned and immovable guiding element supported on said frame and positioned and shaped to be in engagement with and to guide said inking roller to move over said types on a predetermined pathway with respect to said printing head; said guiding element being positioned and shaped so as to engage said inking roller at a side thereof away from the side contacted by said types and for pressing said

inking roller against said types and against force exerted by said types against said inking roller as said inking roller rolls by said types such that the cooperative engagement between said guide means and said inking roller is the sole cause of the inking pressure of said inking roller on said types; said guiding element being shaped and positioned to remain in engagement with said inking roller over the entire said predetermined pathway of said inking roller and also to cause said inking roller to press on said types with a desired pressure over said predetermined pathway;

said yoke end surface being spaced from said guide means such that at least part of said inking roller is normally positioned between them;

said guide means having a first orientation for guiding said inking roller on a pathway that crosses the direction of motion of said yoke; said end surface having a second orientation that is oblique to said first orientation;

a bearing plate connected with said inking roller and movable therewith; said bearing plate normally being in engagement with said yoke end surface, whereby upon motion of said yoke with respect to said guide means, said end surface, pressing upon said bearing plate, shifts said inking roller in one direction along said guide means;

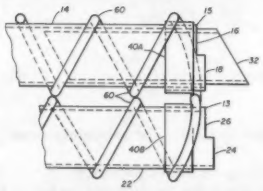
said actuating lever being connected with said inking roller to cause said inking roller to move along said predetermined pathway as said actuating lever is operated.

4,240,349

FOLDABLE LINEAR EXPLOSIVE CHARGE

Charles C. Lash, 1111 E. 25th St., Tulsa, Okla. 74114

Filed Sep. 11, 1978, Ser. No. 941,565
Int. Cl.³ F42B *3/02*
U.S. Cl. 102—24 R **11 Claims**



1. A foldable linear explosive charge (FLEC) comprising at least two units or sticks, each stick having a first end, and a second end, the first end of one stick hingedly attached to the second end of the second stick, both sticks substantially identical, each stick comprising;

(a) a thin-walled tubular member of selected material, wall thickness, diameter, and length;

(b) centering means attached to the first end of a first member, and extending beyond the end of said first member, adapted to be inserted into the second end of a second member;

whereby said centering means serves as an alignment means to ensure coaxial alignment of two members when the second end of a second member is positioned on said centering means, and in end-to-end contact with said first member;

(c) hinge means attached to said first end of said first member, and to the second end of said second member; and

(d) a helix of linear explosive compound (LEC) wrapped around and fastened to said first member, starting from said second end, to said first end, then across the joint between said first and second members, and continuing along said second member to the first end of said second member; said LEC positioned so as to cross said joint over the outer surface of said hinge means;

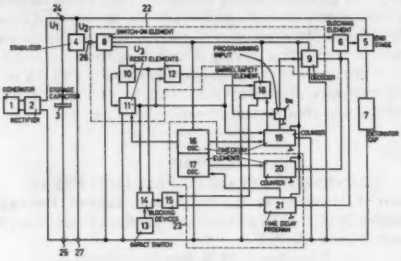
whereby when said second stick is folded about said hinge means with respect to said first stick, said LEC remains between the two parts of said hinge means.

4,240,350

ELECTRONIC FUZE

Klaus Münzel, Klingnau; Panayotis Karayannis, Zurich, and Hansjörg Naef, Buchs, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle, Zurich, Switzerland

Filed Sep. 5, 1978, Ser. No. 939,861
Claims priority, application Switzerland, Sep. 16, 1977, 11331/77
Int. Cl.³ F42C *11/06*
U.S. Cl. 102—215 **4 Claims**



1. An electronic fuze for a projectile having a barrel safety device, an ignition time-delay device, a delay-free ignition device and a self destruction device, comprising:

generator means for generating ignition energy for the projectile;

a storage capacitor for storing energy produced by the generator upon firing the projectile;

a detonator cap which is ignited by the energy stored by the storage capacitor;

an electronic circuit for the barrel safety, for ignition time-delay of the projectile upon impact, for the delay-free ignition upon impact and for the self-destruction of the projectile;

said electronic circuit comprising:

a stabilizer which is exclusively formed of components which collectively define a solid-state circuit;

resetting elements and blocking elements;

a switching-on element connected with said resetting elements and blocking elements; and

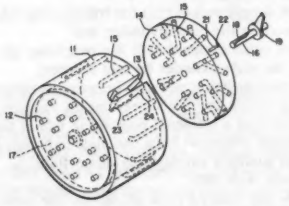
time delay elements in circuit with said resetting elements and said blocking elements and formed of components which collectively form a solid-state circuit.

4,240,351

SAFE-ARM DEVICE FOR DIRECTED WARHEAD

Anthony San Miguel, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,414
Int. Cl.³ F42C *15/40*
U.S. Cl. 102—262 **20 Claims**



12. A safety and arming device comprising:

a housing having at least one explosive path therethrough;
a rotor, mounted on said housing so as to be capable of axial and rotational movement, said rotor having at least one explosive path therethrough;
means, connected to said housing, for regulating the axial and rotational movement of said rotor; and
circuit breaking means, connected to said housing and to said rotor, for providing an electrically conductive path through said rotor and said housing;
whereby said explosive paths are aligned by and said electrically conductive path established by the axial and rotational movement of said rotor.

4,240,352

MOBILE TRACK TAMPER

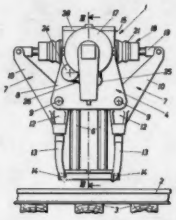
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 834,402, Sep. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 695,733, Jun. 14, 1976, Pat. No. 4,069,763. This application Jul. 2, 1979, Ser. No. 54,131

Claims priority, application Austria, Feb. 4, 1977, 750/77

Int. Cl.³ E01B *27/16*

U.S. Cl. 104—12 **8 Claims**



1. A mobile track tamper comprising a frame arranged for mobility on a track consisting of a multiplicity of ties and two rails fastened to the ties, a tamping head vertically movably mounted on the frame in vertical alignment with a respective one of the rails, and a power drive for vertically moving the tamping head, the tamping head including a pair of tamping tool implements arranged for reciprocation in the direction of track elongation towards and away from each other and capable of tamping ballast under respective ones of the ties upon vertical downward movement of the tamping head and immersion of the tamping tool implements in the ballast adjacent the respective ties, a carrier whereon the ballast tamping tool implements are mounted, drive means for vibrating and reciprocating the tamping tool implements mounted on the carrier and connected to the implements, the drive means comprising an eccentric shaft and reciprocating motors connected respectively to the eccentric shaft and to the tamping tool implements, a housing on the carrier through which the eccentric shaft extends and defining an oil sump in the lower portion thereof, bearings rotatably mounting the eccentric shaft in the housing, the bearings being lubricated by the oil from the sump, and each of the tamping tool implements being constituted by a rigid unit consisting essentially of a tamping tool holder having an arm having a longitudinal plane of symmetry and mounted on the carrier for pivoting in a plane vertical to the track and passing through the rail, the longitudinal plane of symmetry of the tamping tool holder arm extending in the vertical plane and the holder arm being connected to an outer end of a respective one of the reciprocating motors, the outer ends of the reciprocating motors extending through bores in the housing and being guided therein, sealing means substantially preventing oil leaking from the housing through the bores, and two arms extending transversely of the track and rigidly connected to the vertically extending arm to the left and to the right of the vertical plane, and at least one tamping tool stationary with respect to, and mounted on, each of the transversely extending holder arms and extending vertically downwardly from the holder arms for immersion in the ballast to the left and to the right of the rail.

4,240,353

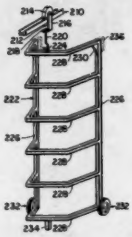
ROLLER CONVEYOR CARRIAGE AND LADING SUPPORTING RACK

C. Richard Barth, 2908 Rockbrook Dr., Plano, Tex. 75074

Filed Jan. 4, 1979, Ser. No. 890

Int. Cl.³ B61B *3/00*; B61F *11/00*; B65G *17/34*

U.S. Cl. 104—93 **3 Claims**



1. In an article of manufacture adapted for transfer of products on a conveyor having hook means through stages of processing while allowing interim storage of such products, the combination comprising:
(a) a tiered carrier including suspension means with at least two vertical support legs connected to said suspension means and mounted to provide and maintain a substantially upright posture of said tiered carrier when suspended from said hook means;
(b) a plurality of vertically spaced apart support brackets rigidly connected substantially at right angles to said vertically disposed support legs;
(c) each of said support brackets forming a "U"-shaped element joined at each of its ends to said vertical support legs;
(d) said suspension means comprising the uppermost support bracket of said support brackets, a hook receiving loop mounted on said upper most bracket to supportably receive in readily removable relation said hook means, and reinforcing gussett members connecting each connection of said uppermost support bracket with said vertical support means; and
(e) said hook loop being mounted and spaced sufficiently with respect to the center of gravity of the carrier to incline said vertical support legs at an angle to the verticle when suspended to prevent products loaded on the support brackets and engaging the support legs from sliding off said support brackets while said carrier is supported from said hook means.

4,240,354

TRUCK MOUNTED RAILROAD CRANE RAIL GEAR ASSEMBLY

Timothy L. Newman, 700 N. Liberty, Jerseyville, Ill. 62050

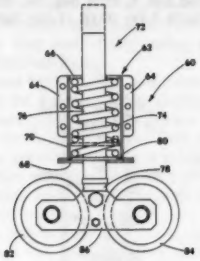
Filed Jun. 1, 1978, Ser. No. 911,637

Int. Cl.³ B61C *13/00*

U.S. Cl. 105—215 C **5 Claims**

1. A train rail gear assembly for use with vehicle frames of truck mounted railroad cranes and other like railroad vehicles, comprising housing means having top, bottom and side walls mounted to said vehicle frame, a fluid actuated cylinder associated with said housing means and extending through the top and bottom walls of said housing means, and a compression spring extending about the fluid actuated cylinder including a piston and chamber section, the fluid actuated cylinder piston

section at its lower end being connected to a pair of rotatably mounted flanged wheels adapted for use with railroad track, the chamber section of the fluid actuated cylinder having flange means associated therewith within the housing means for engaging the bottom wall of the housing means to limit downward movement of the chamber section of the fluid actuated cylinder, said compression spring being mounted in non-compressed condition in said housing means between the flanged means of the fluid actuated cylinder chamber section



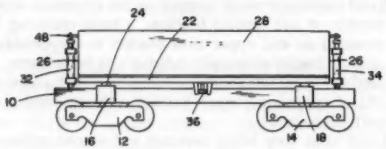
and the top wall of the housing means, said fluid actuated cylinder piston section being operable to first lower said pair of rotatably mounted flanged wheels a predetermined distance for a engagement with a railroad track, and said compression spring being thereafter compressed between the flanged means of the fluid actuated cylinder chamber section and the top wall of the housing means whereby to act as a cushion and shift weight from the vehicle frame to the compressed compression spring.

4,240,355

SIDE DUMPING RAILROAD CAR

Douglas A. Puariea, St. Paul, Minn., assignor to The Maxson Corporation, St. Paul, Minn.

Filed May 21, 1979, Ser. No. 40,484
Int. Cl.³ B61D *9/02, 9/06, 9/10*
U.S. Cl. 105—273 **1 Claim**



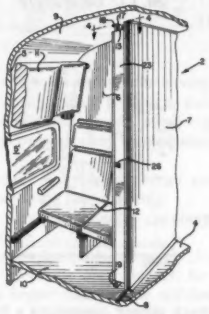
1. A side dumping railway car comprising in combination:
a plurality of wheeled trucks;
a main car frame carried on said trucks;
transverse support bolsters on said main car frame having pivot cradle means thereon;
a hopper resting in said pivot cradle means;
hydraulic cylinder means comprising a single hydraulic cylinder at each end of the car connected to a pivot point on said main car frame at one end of the cylinder and to a pivot point on the hopper at the other end of the cylinder, said pivot points positioned generally on the centerline of the car to permit generally vertical lifting of the hopper relative to the main car frame;
hopper retaining means on each side of the car adapted to hold down one side of the hopper when said hopper is raised by said hydraulic cylinder means so as to raise the hopper on the side opposite said one side, said hopper retaining means comprising a hydraulically moved engagement lug on said main car frame adapted to slide into position to hold down a reaction pin, said reaction pin connected to one side of said hopper;
an air to oil pressure intensifier on said car adapted to pump oil from a reservoir to an oil accumulator, the pressurized oil from said accumulator connected through tilt control valves to operate the hydraulic cylinders; and
an interlock valve means between said tilt control valves and a latch valve means to prevent the passage of pressurized oil to the hydraulically moved engagement lug when the hopper is raised from the main car frame, said latch valve means operated by the movement of said engagement lug into position against said reaction pin and adapted to pass pressurized oil to the lifting hydraulic cylinder means only after said engagement lug has slid into position to hold down said reaction pin.

4,240,356

MODULAR STORAGE ARRANGEMENT FOR A PASSENGER VEHICLE

Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,576
Int. Cl.³ B61D *35/00*
U.S. Cl. 105—323 **11 Claims**



1. In a railway passenger vehicle having a passenger compartment including a floor and ceiling and a vertical compartment wall extending therebetween, an improved compartment storage arrangement comprising:
a vertical panel outwardly spaced from and being substantially parallel to said compartment wall and including upper and lower edge portions respectively coupled with the ceiling and floor of the compartment,
coupling means removably securing said upper and lower edge portions with said ceiling and floor,
a cabinet shell intermediate said compartment wall and panel including an inner vertical wall portion and peripheral wall portions extending outwardly therefrom to said panel about the top, rear and bottom periphery of said shell and having flange portions couplable with said panel and fastening means securing said flange portions to said panel.

4,240,357

FOLDING RAIL CAR DOORS

Thomas E. Phillips, McDonald, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Jan. 10, 1979, Ser. No. 2,462
Int. Cl.³ B65J *1/22*
U.S. Cl. 105—378 **10 Claims**

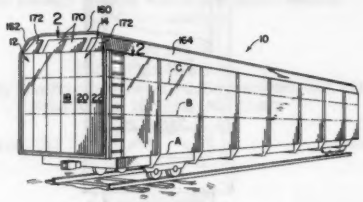
1. In a rail car having:
an interior cavity defined partially by vertical rail car side walls and a roof structure with an inwardly and upwardly directed portion to improve car clearance,
an end opening for loading and unloading lading,
at least one door assembly including a plurality of main

panels each pivotally movable with respect to the other for closing at least a portion of said end opening,

pivoted first mounting means for moving said door assembly between an open position and a closed position,

second mounting means for moving said pivoted first mounting means in directions toward and away from the intermediate portion of said rail car to permit storage of at least a portion of said door assembly along said rail car side wall and means for selective removal of said portion from storage, the improvement comprising:

top panel portions at the top of said door assembly directed angularly inwardly and spaced from each other and said roof structure,



the angle of the top panel portions, the space between each of said top panel portions and every other top panel portion and the spacing of the top panel portions from said roof structure all being of such magnitude that when said door assembly is in said closed condition, said end opening portion above said door assembly is substantially closed, and when said panels are pivotally moved from said closed position to said open position and to storage along said rail car side wall, and back, each of said top panel portions clears every other top panel portion and said roof structure sufficiently for movement relative thereto.

4,240,358

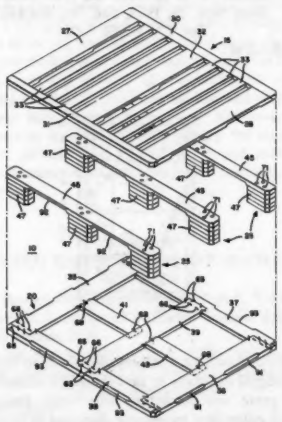
WOOD PALLET

Thomas Munroe, P.O. Box 538, Far Hills Branch, Dayton, Ohio 45419

Filed Feb. 22, 1977, Ser. No. 770,422

Int. Cl.[3] B65D *19/26*

U.S. Cl. 108—51.1 **3 Claims**



1. A wood pallet including

a top, load receiving deck;

a bottom deck;

at least two longitudinally extending stringers;

a plurality of spacer blocks attached to at least the corners of and separating said top and bottom decks;

a plurality of layers of playwood forming each spacer block;

a first plurality of nails extending into and substantially through each layer of plywood to fasten said layers together into a sturdy block;

a second plurality of nails extending through said stringers into said blocks, and

a third plurality of nails extending through each of said top and bottom decks and into said blocks to fasten said decks and blocks into a completed pallet;

said top deck including

a pair of end members; a pair of side members and a plurality of intermediate load supporting members;

said end members each including a beveled surface on the ends thereof which slope downwardly and outwardly;

said side members each including means forming inwardly facing recesses adjacent the ends thereof for receiving said end members, each recess including an end facing abutment for engaging at least a portion of said end member, and further including a complementary beveled surface for receiving and engaging said beveled surface of said end member,

whereby the interconnection between said end and side members through said beveled surfaces provide additional support to said end member and resistance against the upward forces tending to separate the end members from the spacer blocks which may be exerted against said end members as the pallet is lifted by a lifting device.

4,240,359

FREIGHT CARRIER

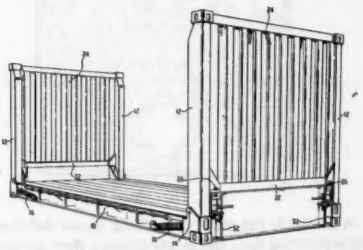
Peter Howe, St. Annes-on-Sea, England, assignor to Dorothy Elizabeth Howe, Lancashire, England

Filed May 19, 1978, Ser. No. 907,496

Claims priority, application United Kingdom, May 20, 1977, 21474/77

Int. Cl.[3] B61D *17/06;* **B65D** *19/00*

U.S. Cl. 108—53.1 **3 Claims**



1. A freight carrier comprising a base structure forming a freight carrying platform and connecting apparatus for releasably connecting the carrier to a similar carrier which is stacked thereon, wherein the connecting apparatus includes interlocking means for interlocking the superposed carriers together, said interlocking means of the connecting apparatus comprising a rotatable interlocking member having a head which can pass through a hole in a base structure of the similar carrier stacked on the carrier having the interlocking means when the rotatable interlocking member is in a disengaged position on its carrier, but is prevented from passing through that hole when the rotatable member is turned into an engaged position, and clamping means for urging said interlocking means towards said base structure to thereby draw the superposed carriers together after interlocking has taken place, said clamping means including a member rotatable about a portion of said

interlocking means, said interlocking means portion being linearly slidable through said clamping means member, said clamping means further comprising a cam member fixed to the base structure in which the rotatable interlocking member is journalled, and an abutment member mounted on the rotatable interlocking member, said clamping means member comprising a second cam member mounted on the interlocking member between the fixed cam member and the abutment member and rotatable relative to the interlocking member for positively urging the interlocking member slidably towards the base structure of the carrier for clamping the carrier to the carrier stacked thereon when interlocking has been effected.

4,240,360

STACKABLE FLAT PALLET

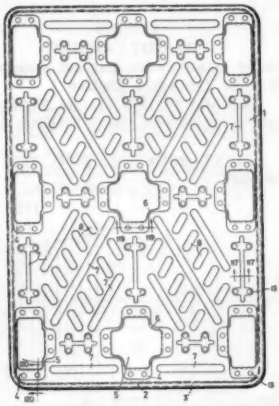
Heinz Sanders, and Horst Langmann, both of Böhmerstrasse 2, D-5800 Hagen, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,727

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730879

Int. Cl.³ B65D *19/28*

U.S. Cl. 108—53.3 12 Claims



1. A stackable flat pallet comprising means defining a sheet metal supporting deck and means defining sheet metal supporting feet connected to said deck, said deck being provided with a plurality of openings each located in line with a respective supporting foot and configured to correspond to the outline of its associated foot, said deck further being provided with corrugations distributed over its surface and with a folded-over edge, each of said supporting feet having a tapered, skid-like configuration and being formed, together with its associated opening in said deck, to define a cavity for receiving the correspondingly located supporting foot of a comparable pallet for stacking, and means defining horizontal flanges connected to said feet, and fastened to said deck, wherein said supporting feet and said flanges are arranged in a plurality of rows with a respective flange disposed between successive feet in each such row, said feet and flanges of each such row are together constituted by a respecfive uniform, shaped sheet metal strip, and the ends of said sheet metal strip are secured by being held in the folded-over edge of said deck.

4,240,361

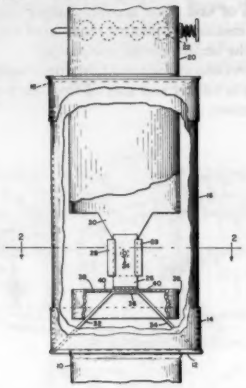
CHIMNEY SAFE HEAT SAVER

Alexander Wisniewski, 12 Cushing St., North Brookfield, Mass. 01535

Filed Feb. 21, 1979, Ser. No. 13,466

Int. Cl.³ F23J *15/00*; B01D *46/10*

U.S. Cl. 110—119 4 Claims



1. The safety and energy saving device for the conventional smoke pipe of a stove which comprises in combination with the conventional smoke pipe a length of pipe having a greater diameter than the conventional smoke pipe and conforming in shape thereto, and being associated therewith at the lower end thereof between the conventional smoke pipe and the stove,

an annular inverted cap supporting said length of greater diameter, said cap being supported with respect to the stove, a support in said cap, said support extending upwardly therefrom, a disc-like member on said support, apertures in said disc-like member and

a connection on said disc-like member connecting the same with respect to the lower end of the conventional smoke pipe.

4,240,362

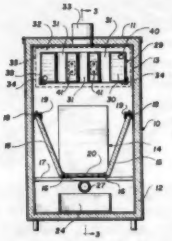
BOILER FOR DOMESTIC HEATING SYSTEMS

Arthur G. Wigdahl, 168 S. Leonard St., West Salem, Wis. 54669

Filed Nov. 28, 1978, Ser. No. 964,432

Int. Cl.³ F23B *7/00*

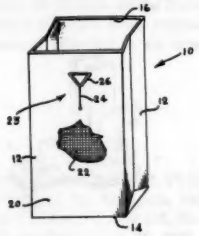
U.S. Cl. 110—234 5 Claims



1. A boiler comprising a rectangular shell, an upwardly open fire box arranged centrally in said shell and including a bottom horizontal grate and refractory side walls rising from said grate, an ash collection receptacle disposed in said shell below said grate, access doors on said shell adjacent to said fire box and said receptacle, a slide-in slide-out power module disposed horizontally in said shell above said fire box and being bodily

removable from the shell through an opening provided in one wall of the shell, said power module having a multiplicity of open-ended substantially vertical fire tubes formed therethrough in the vertical direction, said fire tubes receiving hot gaseous combustion products from the open top of the fire box and passing the same in heat exchange relationship with a heating fluid being circulated continuously through said power module, exhaust means for spent gaseous combustion products opening through the top wall of said shell, said slide-in slide-out power module further comprising a substantially closed water heating chamber surrounding said fire tubes and having connections with return water and hot water supply means in a hot water heating system, and at least one electrical heating element extending within said water heating chamber in the region between adjacent rows of said fire tubes and having a connection through one end wall of said power module.

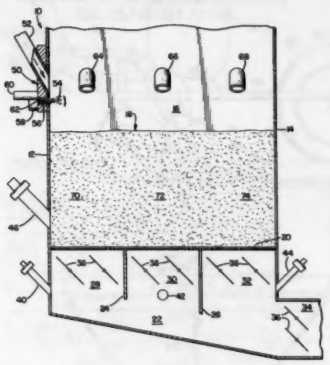
4,240,363
INCINERATOR BAG
Stephen R. Troy, 717 Cottonwood Dr., Severna Park, Md. 21146
Filed Aug. 3, 1979, Ser. No. 63,873
Int. Cl.[3] F23G *9/00*
U.S. Cl. 110—241 **3 Claims**



1. An incinerator bag utilized for reliably and safely destroying the contents of said bag comprising a foldable enclosure having an open top portion, said enclosure having a three ply construction, said three ply construction being in the form of an inner layer of inflammable material, an outer layer of inflammable material and a middle layer of nonflammable, fireproof mesh material sandwich between said inner and outer layers of material, said mesh material having openings therein of a preselected size, said preselected size being no greater than approximately ¼ inch square, and a closure element, said closure element being in the form of an elongated wire having a fireproof handle secured to one end thereof, said closure element being removably attached to said outer layer of material for securely closing said open top portion of said enclosure and simultaneously acting as a handle for transporting said incinerator bag whereby upon incineration of said bag, said inner and outer layers of material are destroyed permitting the incineration of said contents of said bag leaving only said nonflammable, fireproof mesh material to hold the burnt remains of said contents of said bag.

4,240,364
FLUIDIZED BED START-UP APPARATUS AND METHOD
Richard W. Bryers, Flemington, and Thomas E. Taylor, Bergenfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.
Division of Ser. No. 866,985, Jan. 5, 1978, Pat. No. 4,184,438. This application May 3, 1979, Ser. No. 35,618
Int. Cl.[3] F23D *19/02*
U.S. Cl. 110—347 **6 Claims**

1. A method for starting a fluidized bed, comprising the steps of supporting a bed of particulate material at least a portion of which is combustible, dividing the area below said bed into a plurality of zones, selectively passing air through each zone and through the corresponding portions of said bed extending over said zones to selectively fluidize said bed portions, individually controlling the flow of air through each of said zones and therefore through said bed portions, preheating the air in

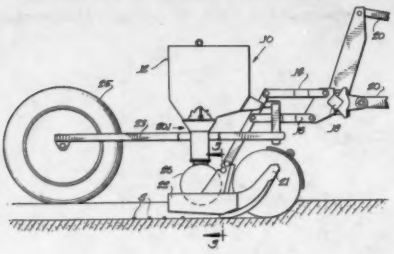


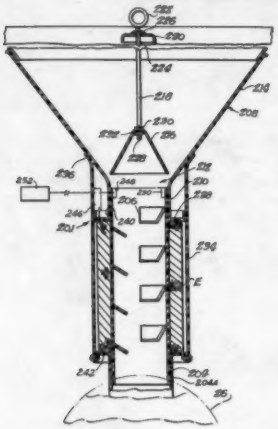
each zone as it flows through said zones, igniting the combustible portion of the particulate material extending above one of said zones, and supplying additional combustible particulate material to said bed portions.

4,240,365
MAGNETIC SEED PLANTER
Raymond D. Amburn, Sterling Heights, Mich., assignor to Dickey-john Corporation, Auburn, Ill.
Continuation of Ser. No. 737,298, Nov. 1, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 972,823
Int. Cl.[3] A01C *1/00*; A01G *7/04*
U.S. Cl. 111—1 **7 Claims**

1. A mobile seed planting apparatus comprising: a supporting frame adapted to be connected to a tractor or the like; a hopper mounted on said supporting frame for containing a supply of seeds and having a seed outlet, a plurality of seed delivery means connected with said seed outlet for delivering seeds therefrom to a plurality of rows on the ground to be planted, and magnetic treatment means connected with each of said seed delivery means and including tubular conduit means forming a path of travel for seeds prior to said delivery thereof to the ground and magnetic seed treating means mounted on

said tubular conduit means for inducing a magnetic field in said path of travel for magnetically treating said seeds passing





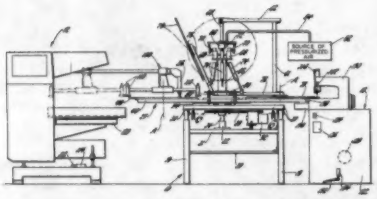
therethrough, substantially immediately prior to delivery of said seeds to the ground.

4,240,366

AUTOMATIC SEWING APPARATUS FOR AIR CUSHIONS

Stanley E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1978, Ser. No. 963,432
Int. Cl.[2] D05B *3/04*
U.S. Cl. 112—121.24 **3 Claims**



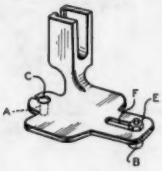
1. Apparatus for automatically sewing a pair of circular sheets of fabric together to form a restraint cushion, said apparatus comprising a base supporting a carriage for rotation about a vertical axis, a plurality of tables, means mounting said tables on said carriage for independent rotation and each of said tables being movable sequentially by the carriage from a first work station to second, third and fourth work stations which are circumferentially spaced about said carriage, a first feeder at said first work station for depositing one of said pair of circular sheets on each of said rotatable tables when the latter is located at said first work station, a second feeder at said second work station for depositing the other of said pair of sheets onto said one of said pair of sheets in concentric relationship therewith when each of said rotatable tables is located at said second work station, means mounted on said carriage and cooperating with each of said tables for holding said pair of sheets in fixed relative positions, a sewing machine at said third work station for sewing the outer peripheral portion of said sheets together when each of said tables is located at said third station and has said pair of sheets thereon, and drive means connected to said carriage for moving each of said tables sequentially from said first work station to said second, third and fourth work stations.

4,240,367

SEWING AID DEVICE

Jakob Pfuhl, Punchbowl, Australia, assignor to Katharina Pfuhl; Ingrid Pfuhl and Kate Models Pty., Limited, all of Punchbowl, Australia

Filed Aug. 20, 1974, Ser. No. 498,948
Claims priority, application Australia, Aug. 27, 1973, PB4645
Int. Cl.[2] D05B *35/00*
U.S. Cl. 112—148 **1 Claim**



1. A sewing aid device comprising:

frame means adapted to hold together in fixed relative position items to be stitched together, and provided with guide means in the form of a raised track adapted to engage with a foot mechanism on a sewing machine in such manner as to permit automatic guiding of the sewing pressure foot mechanism of the sewing machine along said guide means;

said frame means being adapted particularly for the insertion of slide fasteners into garments, comprising an elongated base member provided with a central aperture and with means for retaining a slide fastener thereon, means for holding portions of a garment in close proximity with the fastener, and said guide means in the form of a raised track for guiding a sewing pressure foot mechanism therealong;

the means for holding the garment comprising a two-part member hinged at one end to one end of said base and releasably securable to said base at the other end; and

said guide means in the form of a raised track providing a smooth raised guideway above the level of the said two-part member of substantially constant width across which guide means on a sewing machine may fit closely in such manner as to be constrained to travel along said raised track guide means.

4,240,368

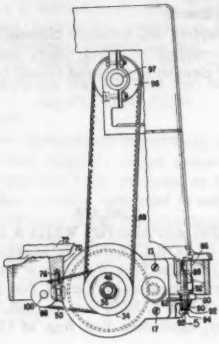
MOTORIZED DRIVE FOR A SEWING MACHINE INCLUDING BELT TENSIONING MEANS

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 17, 1980, Ser. No. 130,792
Int. Cl.[3] D05B *69/02*
U.S. Cl. 112—220 **10 Claims**

1. In combination, a sewing machine frame; a module including a frame, a motor attached to the frame of the module, speed

reducing means which is driven by the motor, a shaft supported by the frame of the module, and a belt driving pulley which is rotatably supported on said shaft and is driven by the speed reducing means; belts on the pulley extending in different directions for driving mechanisms of the sewing machine; and means mounting the module on the frame of the machine for pivotal movement effective to set tension in one belt and translational movement effective to set tension in the other belt.

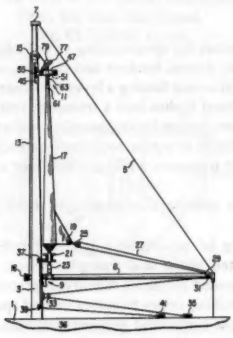


4,240,369

MAINSAIL AND/OR MIZZENSAIL FURLING DEVICE

Harold A. Molz, 17 Revell St., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 855,195, Nov. 28, 1977, Pat. No. 4,122,793. This application Sep. 25, 1978, Ser. No. 945,385
Int. Cl.[3] B63H *9/04*
U.S. Cl. 114—106 10 Claims



7. A masthead holding device for a mainsail and/or mizzensail furling system comprising:

(a) means for non-permanently engaging a mast including a pair of mast engaging flanges,

(b) a pair of substantially longitudinally extending arms, said flanges each being pivotally connected about a vertical axis to said arms,

(c) a swivel maintained a distance from the mast by said arms,

(d) means for connecting a halyard to said swivel,

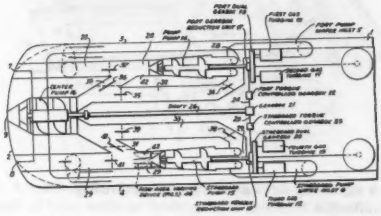
(e) means connected to said arms for maintaining said swivel substantially parallel to the mast and not rotatable relative thereto.

4,240,370

PROPULSION SYSTEM FOR HYDROFOIL, PLANING AND SEMI-PLANING SEA-GOING VESSELS

Louis Lubin, 87-01 Midland Pkwy., Jamaica Estates, N.Y. 11432

Filed Dec. 11, 1978, Ser. No. 968,484
Int. Cl.[3] B63H *11/04*
U.S. Cl. 440—40 6 Claims



1. A propulsion system for hydrofoil, planing and semi-planing sea-going vessels, and the like, said vessels having a hull with a bow, a stern, a port side and a starboard side, said hull having a port pump water inlet formed therethrough on its port side, a starboard pump water inlet formed therethrough on its starboard side and first, second and third water outlets formed therethrough, said propulsion system comprising

motive means in the hull;

a booster first stage system in the hull coupled to and driven by the motive means, said booster first stage system comprising a first axial water jet pump at the port pump water inlet for pumping water from said port pump water inlet and a second axial water jet pump at the starboard pump water inlet for pumping water from said starboard pump water inlet;

a second stage water jet system in the hull aft of the first stage system comprising a third axial water jet pump;

water duct means in said hull from each of the pump water inlets through the corresponding one of the first and second pumps to the corresponding one of the first and second water outlets, from each of the pump water inlets through the corresponding one of the first and second pumps and thence through the third pump, to the third water outlet, and from each of said pump water inlets through said third pump to said third water outlet, bypassing said first and second pumps;

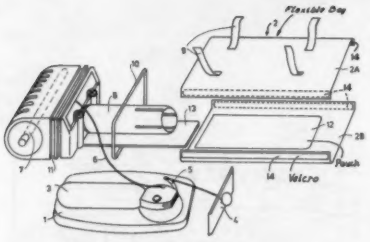
flow direction control means for selectively directing a water flow through first and second pumps simultaneously, through said first pump solely, through said second pump solely, through said third pump solely, through said first and second pumps and said third pump simultaneously, through said first pump and said third pump simultaneously and through said second pump and said third pump simultaneously; and

flow velocity control means for controlling the velocity of water pumped by each of said first and second pumps thereby controlling the velocity of water at said water outlets and, accordingly, the speed of the vessel, said flow velocity control means including first and second substantially tapered trough-like plates movably affixed to opposite points on the insides of said water duct means.

4,240,371
SIGNAL BLADDER

Theodore M. Perry, P.O. Box 8854, Auckland, New Zealand

Filed Aug. 17, 1979, Ser. No. 68,324
Claims priority, application New Zealand, Aug. 28, 1978, 188264
Int. Cl.[3] B63B *45/00*; G09B *5/00*
U.S. Cl. 116—210 4 Claims

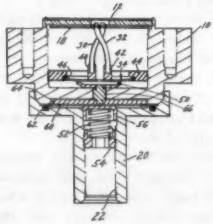


1. A signalling device for divers, comprising:
an inflatable bladder;
container means for removably holding said bladder, said container means comprising a flexible bag formed in two separable halves held together by a releasable securing means comprising strips of hooking material;
gripping means at one end of said container means for being grasped by a hand and removed from said container means;
compressed gas supply means connected to said bladder and said gripping means for supply of compressed gas to inflate said bladder upon removal of said gripping means;
line storage means for storing a flexible line;
a flexible line connected at one end to said bladder and at the other end to said line storage means; and
attaching means for attachment of the device to a diver's body or equipment and comprising flexible straps.

4,240,372
PRESSURE RESPONSIVE ANNUNCIATOR

Allen V. C. Davis, 5600 Alta Canyada Rd., La Canada, Calif. 91011

Filed Mar. 15, 1979, Ser. No. 20,717
Int. Cl.[3] G01L *7/08*
U.S. Cl. 116—271 8 Claims

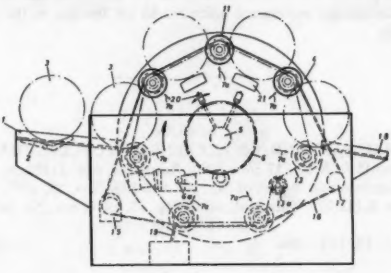


1. In combination:
a housing;
a snap action disc spring capable of preloading being in said housing and having inner and outer peripheral edges, said disc spring having a pair of arms extending from one of its peripheral edges;
means for overcoming said preloading of said disc spring, said overcoming means including means engaging one surface of said disc spring intermediate its inner and outer peripheral edges and being operable upon application thereto of a predetermined force to cause the preloading of said disc spring to be overcome and effect snap action thereof,
said arms undergoing movement upon such snap action having components perpendicular to the axis of said disc spring;
an indicator element;
and means coupling said indicator element and said arms, said arms coacting to effect rotary movement of said indicator element in response to said components;

4,240,373
SPRAYCOATING APPARATUS WITH A HORIZONTAL RUN-IN FOR CYLINDRICAL BODIES

Rudolf Anger, Kirchheim-Teck, Fed. Rep. of Germany, assignor to Sprimag Spritzmaschinenbau GmbH, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,752
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754136
Int. Cl.[3] B05C *5/00*, *13/02*
U.S. Cl. 118—301 17 Claims



1. An apparatus for spraycoating of cylindrical bodies such as barrels, bins, drums, buckets and the like, comprising:
(a) an inlet structure having a lever for controlling the run-in of cylindrical bodies into a transport system;
(b) a transport system for transporting said cylindrical bodies from said inlet structure to an outlet structure, comprising
an upright transport wheel mounted for rotation about an axis,
means for continuously rotatingly driving said transport wheel,
a plurality of adjustable-length horizontal support pins supported about said transport wheel at circumferentially spaced locations radially displaced from said axis,
a pair of rolling cones mounted on and spaced apart along each said horizontal support pin; said cones rotatable relative to said transport wheel,
means for adjusting the length of said horizontal support pins to vary the spacing between said rolling cones; and
means for rotatingly driving said rolling cones;
(c) spraycoating units mounted for spraycoating the exterior surfaces of cylindrical bodies being transported by said transport system; and
(d) an outlet structure,
whereby said cylindrical bodies are transported continuously from said inlet structure to said outlet structure with rotation of said transport wheel, each cylindrical body supported by pairs of said rolling cones mounted on adjacent said horizontal support pins and rotated about its own axis with rotation of said rolling cones.

4,240,374

MAGNETIC IMAGE DECORATOR HAVING ROTATING CYLINDERS AND KNIFE BLADES ASSOCIATED THEREWITH

Donald W. Edwards; Richard D. Kinard, both of Wilmington, Del.; Theodore J. Wirbisky, Avondale, and Richard J. Angelucci, Glenolden, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 788,668, Apr. 18, 1977, Pat. No. 4,185,130. This application May 29, 1979, Ser. No. 42,942

Int. Cl.[3] G03G *13/09*

U.S. Cl. 118—657 8 Claims

1. A decorator for applying magnetically attractable toner particles to a latent magnetic image comprising a sump of magnetically attractable toner particles, at least one pair of rotatable cylinders partially immersed in said toner particles each of which cylinders has at least one magnetic helix in the surface thereof and each of which cylinders is a magnetic auger, a knife blade located between each of said cylinders and the latent magnetic image adapted to create a fluidized standing wave of toner particles which wave contacts the latent magnetic image.

4,240,375

APPARATUS FOR DETECTING CONCENTRATION OF TONER IN DEVELOPING POWDER

Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

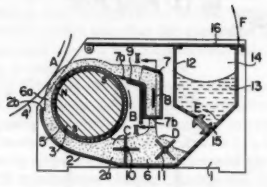
Filed Apr. 11, 1978, Ser. No. 895,373

Claims priority, application Japan, Apr. 13, 1977, 52-41429; Sept. 2, 1977, 52-104831

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.[3] G03G *13/09*

U.S. Cl. 118—689 9 Claims



1. An apparatus for detecting the concentration of toner particles in the developing powder, the developing powder comprised of a mixture of magnetic carrier particles and pigmented toner particles, comprising means for containing said developing powder, means for transporting said developing powder in said container means to the surface to be developed, a hollow member, means for separating said developing powder from said transport means and for guiding said developing powder to said hollow member, and a sensor element operated in response to the magnetism of the developing powder flowing in said hollow member, said sensor element being formed flat and disposed in said hollow member in a manner that the flat surfaces of said sensor element are in parallel to the direction of flow of said developing powder moving in said hollow member.

4,240,376

METHOD FOR KEEPING AQUATIC ANIMALS ALIVE OVER LONG PERIODS OF TIME

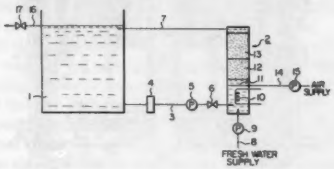
Naoya Kominami; Hirokazu Fukumi; Naokuni Yamawaki, and Junji Nomura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 802,338, Jun. 1, 1977. This application Dec. 13, 1978, Ser. No. 969,132

Claims priority, application Japan, Jun. 8, 1976, 51/66814

Int. Cl.[3] A01K *63/00*

U.S. Cl. 119—2 22 Claims



1. A method for keeping aquatic animals alive over a long period of time without feeding them and in a high density in environmental water, comprising the steps of:

(A) placing aquatic animals in a density greater than 200 kg/m^3 in environmental water in a container;

(B) controlling the temperature of said environmental water so that said temperature is maintained at a temperature of from the lowest possible temperature in which said aquatic animals are able to exist to a temperature of 7° C. above said lowest possible temperature;

(C) controlling ammonia compounds in said environmental water so that the total concentration thereof does not exceed 20 ppm;

(D) controlling water-soluble organic compounds in said environmental water so that the total concentration thereof does not exceed 150 ppm;

(E) controlling carbonic acid radical in said environmental water so that it does not exceed a concentration of 1000 ppm and;

(F) regulating molecular oxygen dissolved in the environmental water so that its concentration is maintained at 3 ppm or more.

4,240,377

FLUIDIZED-BED COMPACT BOILER AND METHOD OF OPERATION

William B. Johnson, Gansett Point, Woods Hole, Cape Cod, Mass. 02543

Continuation-in-part of Ser. No. 764,052, Jan. 31, 1977, abandoned. This application Jan. 19, 1978, Ser. No. 870,696

Int. Cl.[3] F22B *1/02*

U.S. Cl. 122—4 D 55 Claims

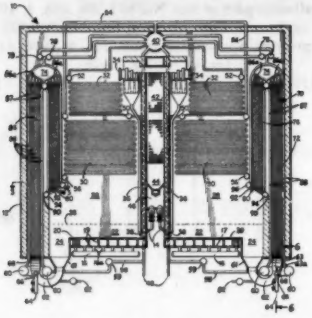
1. An improved fluidized bed combustion and heat transfer apparatus having a combustion chamber with a fluidized bed of particulate matter generally supported on a support member adapted to permit introduction of a fluidizing gas medium into the particulate matter and an inlet for introducing a combustible fuel material into the fluidized bed, wherein the improvement comprises:

generally vertically extending heat exchange means generally separated from the fluidized bed, said heat exchange means providing a generally walled heat exchange chamber essentially free of any obstruction to fluid flow therethrough, with heat exchange fluid in the walls of said heat exchange chamber and coupled to apparatus adapted to utilize heated heat exchange fluid;

means for withdrawing a portion of the constituents of the fluidized bed and introducing said withdrawn portion into said heat exchange chamber, generally at the bottom thereof, in a generally fluidized state; and

means for reintroducing fluidized material flowing through said heat exchange chamber into the fluidized bed in the combustion chamber generally from the top of said heat exchange means,

such that said withdrawn portion of fluidized materials circu-



lates from the fluidized bed, through said heat exchange chamber in said heat exchange means and back into the fluidized bed in said combustion chamber, whereby heat associated with said withdrawn portion of fluidized material flowing through said heat exchange chamber is transferred to said heat exchange fluid through the walls of said heat exchange chamber.

4,240,378

COMBUSTION APPARATUS

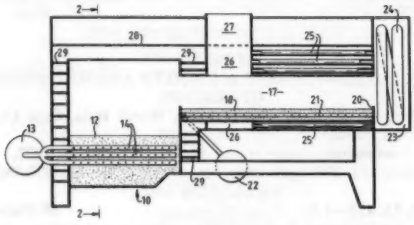
Peter B. Caplin, Energy House, Olney, Buckinghamshire, England

Filed Aug. 8, 1978, Ser. No. 931,974

Claims priority, application United Kingdom, Aug. 18, 1977, 34795/77

Int. Cl.³ B09B *3/00*

U.S. Cl. 122—4 D **6 Claims**



1. A boiler comprising a firebox to which fuel is fed having a fluidized combustion bed to which a supply of air under pressure is fed to initiate and sustain combustion, an elongated flame tube extending from said fire box and communicating at one end therewith in which combustion of said fuel may continue, an array of smoke tubes concentricly located about said flame tube and extending parallel thereto, the other end of said flame tube and the adjacent ends of said smoke tubes communicating with a chamber so that the products of combustion issuing from the flame tube are fed thereto, the free ends of said smoke tubes communicating with a chimney for exhaust and a water jacket surrounding said firebox, flame tube and smoke tubes, a superheater located within said chamber and communicating with said water jacket for the generation of superheated steam.

4,240,379

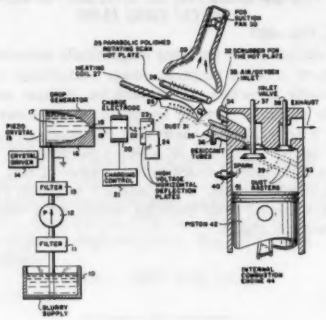
METHOD AND MEANS FOR CONTROLLING EXPLOSIVE DUST WITH COMPUTER PROGRAMMED STRATIFIED FUEL INJECTED COMBUSTION

John W. Armbruster, 475 Munroe Ave., North Tarrytown, N.Y. 10591

Filed Jun. 23, 1978, Ser. No. 918,560

Int. Cl.³ F02B *45/08, 19/04*

U.S. Cl. 123—23 **10 Claims**



1. A method for making the fueling of an engine subject to micro interval changes in fueling compatible with the speed of a high speed computer with programming and memory instruction components for carrying on computations relative to the fueling of the engine comprising the steps of,

providing fuel portions ultrasonically at micro second intervals; distributing said fuel portions in rasters of variable size; predetermining by program and memory instructions the sizes and times of provision of said fuel rasters according to rapidly changing engine load conditions;

sensing a particular engine load condition; and igniting the provided fuel raster.

4,240,380

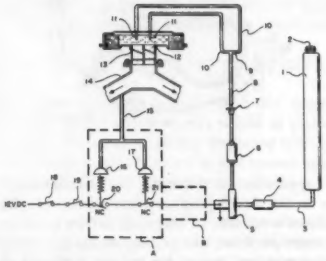
WATER INJECTION SYSTEM

Bernie L. Slagle, Rte. 206, R.D. #6, Vincentown, N.J. 08088

Filed Mar. 21, 1977, Ser. No. 779,723

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 L **9 Claims**



1. A water injection system for an internal combustion engine having carburetor means, a plurality of combustion chambers and a manifold through which a fuel air mixture is fed to said combustion chambers comprising:

a reservoir for holding a supply of tap water;

a powered pump means and means connecting the same to said reservoir for providing pressurized water from said reservoir;

nozzle means located in the upper part of said carburetor

means, and means connecting the output of said pump means to said nozzle means;

control means for controlling the operation of said pump means;

pressure sensitive means connected to said manifold and to said control means and being responsive to the pressure within said manifold;

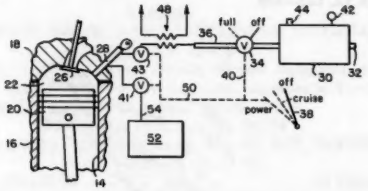
said pressure sensitive means and said control means activating said pump means when said pressure sensitive means senses a first predetermined pressure and deactivating said pump means when said pressure sensitive means senses a second and different predetermined pressure said pump means delivering a constant volume of water to said nozzle means regardless of the engine speed whenever said pump means is activated.

4,240,381

INTERNAL COMBUSTION ENGINE SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 972,786, Dec. 26, 1978, Ser. No. 970,320, Dec. 18, 1975, Ser. No. 955,896, Oct. 30, 1978, abandoned, Ser. No. 961,264, Nov. 26, 1978, Ser. No. 955,895, Oct. 30, 1978, abandoned, and Ser. No. 951,383, Oct. 16, 1978.
This application May 8, 1979, Ser. No. 37,161
Int. Cl.³ F02B *41/00*
U.S. Cl. 123—26 **52 Claims**



1. A method for operating an internal combustion engine including at least one piston-cylinder-combustion chamber system comprising the steps of:

(a) operating each piston-cylinder-combustion chamber system to provide at least partial strokes consisting of inlet, compression, power, and exhaust strokes;

(b) operating said compression stroke with a compression ratio substantially less than the expansion ratio to provide only enough oxygen to accommodate only enough fuel to supply power cruise conditions;

(c) storing a supply of oxygen-containing compressed gas in a tank adjacent to said internal combustion engine; and

(d) increasing the power of said engine in response to throttle demand for more power than is available from said operating steps, by feeding compressed gas from said tank to each combustion chamber during the end of said compression stroke and prior to said power stroke and also feeding a corresponding additional quantity of fuel to said combustion chamber with said compressed gas.

4,240,382

SPEED SENSITIVE ELECTRONIC FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Junuthula N. Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1978, Ser. No. 901,379
Int. Cl.³ F02B *3/04*
U.S. Cl. 123—485 **18 Claims**

1. In combination with an internal combustion engine having means for generating trigger signals indicative of at least two diametrically opposite rotational positions of the engine's crankshaft, a sensor generating a load signal having a value indicative of the engine's load, and at least one electrically actuated fuel injector valve for delivering fuel to the engine in response to an injection signal, an electronic fuel control system for generating injection signals comprising:

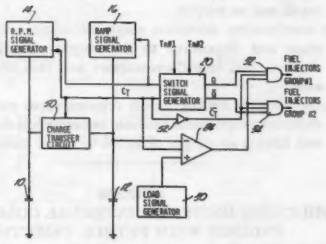
RPM signal generator means for generating in a first interval between two successively generated trigger signals a first signal, said first signal having a value variable as a predetermined function of time;

a first capacitor for storing said first signal and generating an RPM signal having a value varying with the value of said first signal;

a second capacitor for storing, in a second interval between two successive trigger signals, a sum signal having a value indicative of said RPM signal at the end of said first interval plus the integrated sum of a second signal;

switch signal generator means for generating transfer signals in response to said trigger signals, said transfer signals having a predetermined pulse width small compared to the interval between successive trigger signals;

first comparator means for comparing the value of the RPM signal stored by said first capacitor with the value of the sum signal stored by said second capacitor in response to said transfer signal to generate a discharge signal when the



value of said RPM signal is smaller than the value of said sum signal;

discharge circuit means for discharging said second capacitor in response to said discharge signal to decrease said sum signal to a value equal to the value of said RPM signal;

first ramp signal generator means for generating said second signal, said second signal increasing, during said second interval, the value of the signal stored in said second capacitor at a predetermined rate;

second comparator means receiving the load signal and said sum signal for generating said injection signal having a pulse duration equal in time to the time between the initiation of the transfer signal and the time the value of said sum signal equals the value of said load signal; and

gate means disabled by said transfer signal for transmitting said injection signals to said at least one injector valve, the disabling of said gate means limiting the duration of said transmitted injection signals to a duration equal to the time it takes said ramp signal to increase the value of said sum signal from the value of said RPM signal to the value of said load signal.

4,240,383

FUEL METERING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

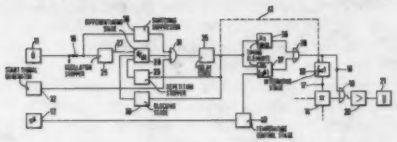
Michael Horbelt, Schwieberdingen; Hans Schnürle, Walheim; Ulrich Drews, Vaihingen-Pulverdingen, and Richard Bertsch, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,508

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814397

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—492 **10 Claims**



1. A device for meuering fuel in an internal combustion engine having semsors for detecting operating parameters and a fuel metering system comprising

a sensor element for the amount of air throughflow of an internal combustion engine,

an oscillation stopper circuit responsive to said sensor element and having an output,

a switching suppressor responsive to said sensor element and having an output,

a repetition stopper and a blocking stage each having an input and an output,

an acceleration detection stage including a differentiating stage and responsive to the outputs of said oscillation stopper, said repetition stopper and said blocking stage, and

an AND gate having inputs responsive to outputs of said switching suppressor and said acceleration detection stage and having an output directed to a fuel metering system.

4,240,384

INDUCTION UNITS FOR INTERNAL COMBUSTION ENGINES WITH PETROL INJECTION

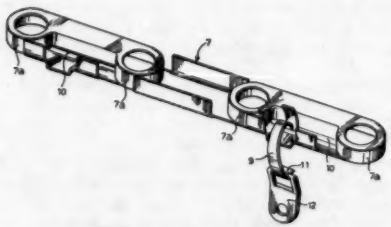
Mario Urbinati, Turin, and Alessandro Nannini, Vinovo, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed May 16, 1979, Ser. No. 39,550

Claims priority, application Italy, Jun. 26, 1978, 68493 A/78

Int. Cl.³ F02B *3/00;* **F02M** *39/00*

U.S. Cl. 123—470 **3 Claims**



1. An induction unit for an internal combustion engine with fuel injection, comprising:

a plurality of fuel injectors having parallel axes,

an induction manifold adapted to receive said injectors, said manifold having respective seats for supporting said injectors,

a retaining member for retaining each of said injectors on its respective seat in said induction manifold, and

means for securing said retaining member to said induction manifold,

wherein said securing means comprises at least one C-shaped strip spring, support means pivotably connecting one end of said strip spring to said manifold,

wherein said retaining member comprises a plate having, in correspondence with each said spring, a seat in which the other end of each said spring is releasably engageable by a snap action, and

wherein the ends of said C-shaped strip spring are disposed in a plane containing the axes of said injectors on a line parallel to said axes to provide a constant retaining force to said injectors in the direction of their axes.

4,240,385

INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

Günter Kulke, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

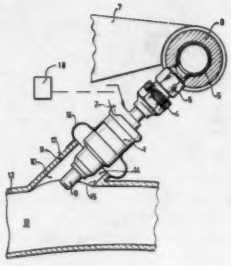
Continuation of Ser. No. 847,299, Oct. 31, 1977, Pat. No. 4,143,625. This application Feb. 13, 1979, Ser. No. 11,824

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653674

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ F02M *53/04*

U.S. Cl. 123—470 **4 Claims**



1. An injection valve for mechanically controlled feed of fuel into an intake duct of an internal combustion engine, said valve being supported by sealing means in means defining an aperture in said intake duct, the further improvement wherein:

said injection valve which includes an exterior wall is supported freely within said means defining said aperture by a bellows means.

4,240,386

VARIABLE STROKE ENGINE OR COMPRESSOR

Oliver Crist, 342 Skyline Dr., Vista, Calif. 92083

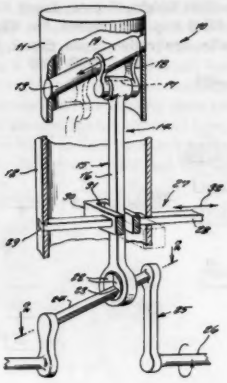
Filed Mar. 5, 1979, Ser. No. 17,562

Int. Cl.³ F02B *75/04, 75/36*

U.S. Cl. 123—48 B **4 Claims**

1. A variable stroke piston drive, comprising in combination, a cylinder, a piston slideable in said cylinder, a wrist pin in said piston, said wrist pin extending angularly inclined respective to a stroke direction of said piston; said drive also including a crankshaft, a throw arm on said crankshaft, a shaft on an outer end of said throw arm, said shaft being angularly inclined respective to a rotational axis of said crankshaft; a connecting rod assembly between said wrist pin and said throw arm shaft; and a shift mechanism for sliding said connecting rod assembly laterally along said wrist pin and said throw arm shaft, said

mechanism comprising a bar slideable transversely through said piston, a frame formed along an intermediate portion of



said bar, a slot in said frame extending transversely to said bar, and said connecting rod assembly extending through said slot.

4,240,387

INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

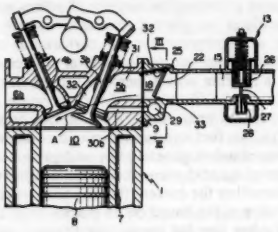
Katsuhiko Motosugi; Shuhei Toyoda; Hiroshi Takahashi, and Toshio Tanahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 19, 1979, Ser. No. 58,758

Claims priority, application Japan, Aug. 10, 1978, 53-97599

Int. Cl.³ F02B *29/02, 31/00*

U.S. Cl. 123—52 M **19 Claims**



1. A multi-cylinder internal combustion engine having a plurality of cylinders, each having a combustion chamber and an intake valve which has a valve head, said engine comprising:

at least one intake passage common to at least two cylinders and comprising a collecting portion having an inlet, and at least two branch intake passages branched off from said collecting portion, each of said branch intake passages having an upper wall and a bottom wall and being connected to said respective combustion chamber via said corresponding intake valve;

fuel supply means arranged in the inlet of said collecting portion;

a common connecting passage;

at least two branch connecting passages each being connected to said common connecting passage and having an opening which opens into said respective branch intake passages, and;

at least two rotatable throttle valves each being arranged in said respective branch intake passage at a position upstream of the opening of said corresponding branch connecting passage and having an upper edge and a lower edge which cooperates with the bottom wall of said corresponding branch intake passage to form therebetween a mixture flow passage, the cross sectional area of which is increased as the corresponding throttle valve is rotated in accordance with an increase in the level of the load of said engine, the upper edge of each of said throttle valves cooperating with the upper wall of said corresponding branch intake passage to prevent a mixture from flowing between the upper edge of said corresponding throttle valve and the upper wall of said corresponding branch intake passage.

4,240,388

METHOD FOR CONTROLLING TIMING OF SPARK IGNITION FOR AN INTERNAL COMBUSTION ENGINE

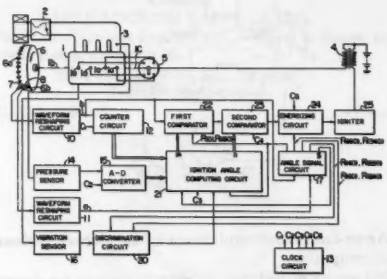
Norio Omori, Kariya; Yutaka Kawashima, Okazaki; Hideya Fujisawa, Kariya; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Sep. 11, 1978, Ser. No. 941,207

Claims priority, application Japan, Sep. 19, 1977, 52-112351; Oct. 20, 1977, 52-126516

Int. Cl.³ F02P *11/02*

U.S. Cl. 123—425 **10 Claims**



1. A method for controlling the timing of spark ignition for an internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:

establishing a timing characteristic of spark ignition relative to operating conditions of said engine so that a maximum output torque is produced by said output shaft in each of said operating conditions;

monitoring the magnitude of load of said engine;

comparing the magnitude of load monitored by said load monitoring step with a predetermined magnitude;

detecting a first and second rotational positions of said engine before the arrival and at the arrival of said piston to the top dead center position thereof, respectively;

monitoring the magnitude of vibration of said engine by a vibration responsive means coupled to said engine;

averaging the magnitude of vibration monitored by said monitoring step during the rotation of said output shaft from said first to second rotational positions detected by said position detecting step;

comparing the magnitude of vibration monitored by said vibration monitoring step with a reference magnitude proportional to the output average value of said averaging step; and

changing the control mode of the timing of spark ignition in response to the load comparison result of said load comparing step such that the timing of spark ignition is controlled in accordance with said established timing characteristic of said establishing step and irrespective of the

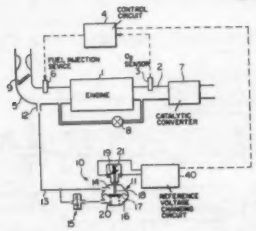
vibration comparison result of said vibration comparing step in response to the load comparison result indicative of the magnitude of load being smaller than said predetermined magnitude and that the timing of spark ignition is controlled in accordance with both said estblished timing characteristic of said establishing step and the vibration comparison result of said vibration comparing step in response to the load comparison result indicative of the magnitude of load being larger than said predetermined manitude.

4,240,389

AIR-FUEL RATIO CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Ruji Shimazaki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 18, 1978, Ser. No. 907,339
Claims priority, application Japan, Feb. 15, 1978, 53/15340
Int. Cl.³ F02B *75/10*
U.S. Cl. 123—492 **4 Claims**



1. An air-fuel ratio control device for an internal combustion engine comprising:

a first sensor provided in an exhaust passage for detecting the oxygen concentration of exhaust gas;

a control circuit having means for comparing the output voltage from said first sensor with a reference voltage so that an air-fuel ratio of the mixture being introduced into the internal combustion engine is discriminated as rich or lean with respect to stoichiometric air-fuel ratio during all operating conditions of the engine;

means for supplying fuel into an intake passage of the internal combustion engine, so that when the air-fuel ratio of the mixture is leaner than the stoichimetric air-fuel ratio the amount of fuel is increased and when the air-fuel ratio of the mixture is richer than the stoichiometric air-fuel ratio the amount of fuel is decreased;

a second sensor for detecting the accelerating operating conditions of the internal combustion engine, said second sensor having an output signal indicating engine acceleration and comprising a diaphragm-type switch having a diaphragm which is actuated by vacuum pressure drawn from the intake passage downstream of a throttle valve, said diaphragm-type switch sends an accelerating signal to the control circuit when the absolute value of intake pressure is abruptly increased; and

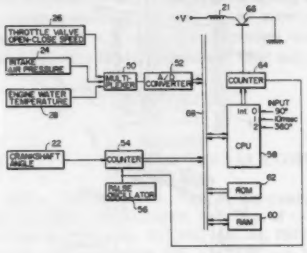
means, responsive to said output signal, for changing said reference voltage to a value different from a predetermined value so that the air-fuel ratio of the mixture being controlled is changed so as to be richer only when the internal combustion engine is in the accelerating operating conditions.

4,240,390

AIR-FUEL RATIO CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Keiso Takeda, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 3, 1979, Ser. No. 63,395
Claims priority, application Japan, Sep. 1, 1978, 53-107726
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—480 **9 Claims**



1. An air-fuel ratio control system in an internal combustion engine comprising: a carburetor in which a basic air-fuel ratio is set on the lean side rather than at a controlled air-fuel ratio; a fuel injection valve for injecting feed of fuel so that the air-fuel ratio can attain a controlled air-fuel ratio; and a control circuit for basically controlling the fuel flowrate injected from said fuel injection valve according to RPM of the engine and an air intake pressure, and for correcting and controlling said fuel flowrate according to operating conditions of the engine during transient operating conditions, wherein said control circuit comprises: a multiplexer fed with an output from the throttle valve open-close speed sensor, an output from the intake air pressure sensor, and an output from the engine cooling water temperature sensor; an analog-digital converter for converting an output from said multiplexer into a digital value; a first counter, a pulse oscillator and a crankshaft angle sensor, said first counter counting the number of pulses generated by said pulse oscillator per output generated by said crankshaft angle sensor; a microcomputer for performing calculations based on outputs from said analog-digital converter and said first counter; a random access memory for provisionally storing constants and the like required for operation in said microcomputer; a read only memory for storing programs and the like required for fuel injection; a second counter for counting the number of pulses generated by said pulse oscillator per output generated by said microcomputer; a power transistor for on-off controlling the current flowing to an exciting coil of said fuel injection valve based on an output from said second counter; and a bus line for connecting between said components.

4,240,391

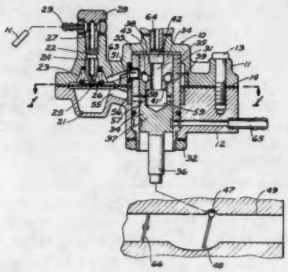
FUEL SUPPLY CONTROL DEVICE FOR FUEL INJECTED INTERNAL COMBUSTION ENGINE

Hidenobu Nagase, Wako; Kiyoshi Miyaki, Asaka; Hiroshi Shirakura, Kamifukuoka, and Yasuo Ohashi, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 965,875
Claims priority, application Japan, Dec. 19, 1977, 52-152540
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—454 **6 Claims**

1. In a control device for liquid fuel supply for an internal combustion multi-cylinder engine having fuel injection nozzles, the combination of: a stationary housing having an upper part and a lower part, a metal diaphragm clamped between said housing parts, a plurality of constant differential pressure valves, each valve having an upstream cavity formed in the

lower housing part and a downstream cavity formed in the upper housing part, said cavities being separated by said diaphragm, each constant differential pressure valve having a discharge passage for connection with a fuel injection nozzle, a valve body in each downstream cavity having a port closed by contact with said diaphragm, each downstream cavity containing a spring acting to apply a pressure against said diaphragm to move it in a direction to admit fuel from said upstream cavity into said valve body and discharge passage, a stationary sleeve mounted in both housing parts and extending through said diaphragm and having a central bore, a metering member mounted to turn in said bore and having a central chamber, means for delivering liquid fuel from said central



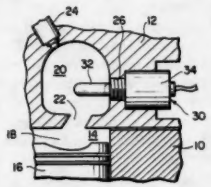
chamber to each of said downstream cavities, a substantially flat ring having a notched outer periphery and a solid inner periphery mounted on said metering member, said substantially flat ring having a notched outer periphery and a solid inner periphery having a notched periphery, said stationary sleeve having a plurality of openings communicating with notches on said substantially flat ring having a notched outer periphery and a solid inner periphery to form variable orifices, passage means in said upper housing part establishing communication between said sleeve openings and said downstream cavities, and means for turning said metering member in proportion to the rate of air flow through an air intake passage for the engine.

4,240,392

RETRACTABLE GLOW PLUG FOR DIESEL ENGINE

Yutaka Matayoshi, Kamata-motomachi; Masayuki Tamura, Yokohama, and Yoshiro Anegawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 17, 1979, Ser. No. 4,204
Claims priority, application Japan, Feb. 24, 1978, 53/20639
Int. Cl.[3] F02B *9/08*; F02P *19/02*
U.S. Cl. 123—145 A **9 Claims**



1. A glow plug for preheating of air in a swirl-producing precombustion chamber of a compression-ignition internal combustion engine, the glow plug comprising:

a body which is adapted for fixed installation in the engine substantially without protruding into the precombustion chamber and formed therein with an elongate bore opening at one end of said body;

an electromagnet constituted of a magnet coil stationarily disposed in said bore and a member which is movably received in said bore and serves as an iron core passing through said magnet coil, so that the distance of said member from said end of said body varies as said magnet coil is energized and deenergized;

a spring disposed in said bore to bias said member in an axial direction;

a heating head of an elongate shape fixed at one end thereof to said member and partly received in said bore of said body so as to longitudinally move relative to said body through said end of said body when said member is moved, said heating head comprising therein an electric heater wire; and

seal means for preventing inflow of a gas into said bore through said end thereof;

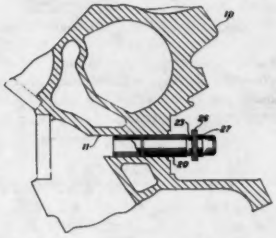
said bore, said member, said spring, and said heating head being shaped and arranged such that a major portion of said heating head protrudes from said body when said magnet coil is energized to cause said member to take a first position relatively close to said end of said body and retracts into said body when said magnet coil is deenergized to allow said member to be brought to a second position relatively remote from said one end of said body by said spring.

4,240,393

SELF LOCKING VALVE GUIDE

Jose Rosan, Jr., Newport Beach, Calif., assignor to Rosan, Inc., Newport Beach, Calif.

Filed Jan. 25, 1979, Ser. No. 6,341
Int. Cl.[3] F01L *3/08*
U.S. Cl. 123—188 GC **6 Claims**



1. A self-locking valve guide for installation on a cylinder head comprising in combination a cylindrical body means, a beveled pilot means at one end thereof,

an annular groove,

an annular serrated locking flange means, installation means at the end opposite the pilot means, wherein metal is displaced from the cylinder head and compressed into said annular groove by said locking flange means to form a metal to metal lock of the valve guide into said cylinder head.

4,240,394

ROTARY ENGINE

Joachim E. Lay, 1749 Ridgewood, East Lansing, Mich. 48823

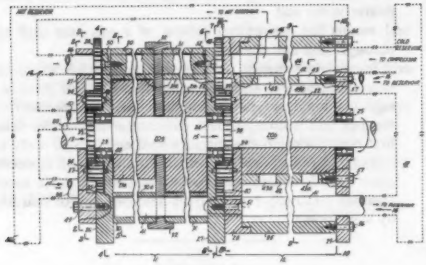
Filed Oct. 6, 1978, Ser. No. 949,196
Int. Cl.[3] F02B *53/06*, *53/08*
U.S. Cl. 123—214 **8 Claims**

1. In a rotary engine including a shaft mounting at least one eccentric rotor on a longitudinal axis in a closed housing such that a fluid is provided in variable volume compartments between the rotor and the housing formed by multiple sliding abutments mounted around the housing in sealing engagement

with the rotor as the rotor rotates on the axis the improvement which comprises:

(a) two separate sets of fixed radial position rotatable gears mounted around the shaft so that the sets are on opposite ends of the housing, wherein in each set a central gear is provided around the shaft and an outer gear is drivable by an intermediate gear which is drivable by the central gear;

(b) at least one rotary inlet tube and outlet tube each having a longitudinal axis mounted on the housing around the rotor parallel to the longitudinal axis of the shaft with openings in the tubes for supplying fluid to the compartments, wherein the outer gears are mounted around the inlet tube at one end of the housing and around the outlet tube at the other end of the housing to rotate the tubes



with the openings in the tubes leading into corresponding openings in the housing such that in operation periodically each compartment is provided with a fluid through the inlet tube, the rotor is rotated by the fluid and then the fluid is exhausted through the outlet tube; and

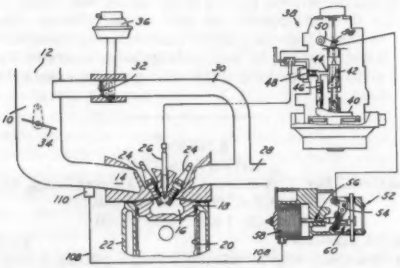
(c) a gas compressor including an eccentric compressor rotor mounted on the shaft in a compressor housing with sliding abutments mounted radially on the rotor which sealably engage an inner wall of the compressor housing to form gas compartments of variable volume as the shaft is rotated wherein the outlet tube extends outside of the compressor housing in a confined space such that the compressed gas is in a heat exchange relationship with the exhausted gas in the outlet tube to provide a regenerator for transferring heat from the exhausted gas.

4,240,395

AIR/FUEL RATIO CONTROLLER

Aladar O. Simko, Dearborn Heights, and Michael M. Schechter, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1978, Ser. No. 937,693
Int. Cl.³ F02D 1/14; F02M 25/06
U.S. Cl. 123—445 **23 Claims**



1. An air/fuel ratio controller for use with the fuel injection system of an internal combustion engine of the spark ignition type having an air-gas induction passage open at one end to air at ambient pressure level and connected at its other end to the engine intake manifold to be subject to manifold vacuum changes therein, a throttle valve rotatably mounted for movement across the passage to control the air-gas flow therethrough, an exhaust gas recirculation (EGR) passage means connecting engine exhaust gases to the induction passage above the closed position of the throttle valve, an EGR flow control valve mounted in the EGR passage means for movement between open and closed positions to control the volume of EGR gas flow, and an engine speed responsive positive displacement type fuel injection pump having a fuel flow output to the engine that varies in direct proportion to changes in engine speed to match fuel flow and mass air flow through the induction system of the engine over the entire speed and load range of the engine to maintain the ratio of air to fuel constant, the fuel pump having a fuel flow control lever selectively movable in opposite directions to vary the fuel flow output per cycle, the controller characterized by,

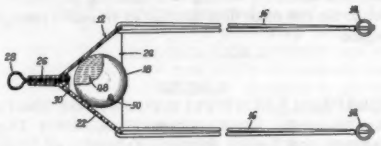
a mechanical linkage mechanism including a primary lever fixed to the pump lever for concurrent movement, an engine manifold vacuum responsive servo means, a link connecting the servo means to the primary lever for moving the primary lever and fuel lever to vary the fuel flow output as a function of changes in intake manifold vacuum indicative of changes in air flow through the induction passage to maintain the ratio of air to fuel constant, and a fuel enrichment control lever operably interconnected to the EGR valve and primary lever for modifying the movement of the primary and fuel flow levers to vary fuel flow as a function of the addition or deletion of EGR gases to the induction passage to compensate for the resulting change in percentage of air flow with respect to the total gas flow inducted to maintain a constant air/fuel ratio.

4,240,396

GAME-BALLOON LAUNCHER

William M. Randoll, 653 Loring St., San Diego, Calif. 92109

Filed Sep. 11, 1978, Ser. No. 941,130
Int. Cl.³ F41B 3/02
U.S. Cl. 124—17 **3 Claims**



1. A game comprising

a launcher and a balloon,

the launcher including:

(a) a holder having a recess for receiving the balloon;

(b) a pair of handles;

(c) a pair of elastic strings interconnecting the holder and respective handles;

the balloon being filled with water, and easily breakable,

the launcher being separate and detached from all other mountings and instrumentalities and being of substantial size to render it practical for utilization by three persons, namely one holding each of the handles and one manipulating the holder, and the launcher being adapted for free movement of the persons so as to enable positioning of it without restriction, and the size thereof being so great as to require substantial exertion by each of the persons to manipulate the game,

the holder being adapted to be drawn in a rearward direction against the elasticity of the strings and the supporting action of the handles, and released for projecting the balloon from the holder,

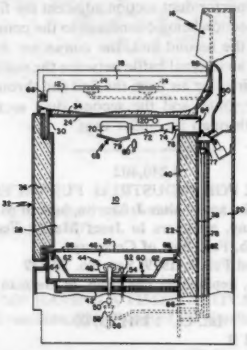
the balloon being so flexible as to readily spread a great

extent in directions transverse to the direction of impact with a target, and to be easily broken upon such impact.

4,240,397
FUEL SAVER OVEN

Harry W. Seidel, Mertztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 24, 1979, Ser. No. 6,135
Int. Cl.[3] A21B *1/00*; F24C *15/32*
U.S. Cl. 126—21 R 10 Claims



1. A gas-fueled oven comprising a plurality of walls defining an oven cavity, at least one burner in the oven cavity, means for exhausting air from said oven cavity including an exhaust vent in one of said walls, means for supplying fuel to said burner, means for thermostatically cycling the burner on and off, means for closing said vent when the burner is off, and said closing means being controlled by said cycling means.

4,240,398
CLEANING DEVICE FOR COOKER GRILLS

Arthur H. Lindop, Kilbride Post Office, Kilbride, Ontario, Canada

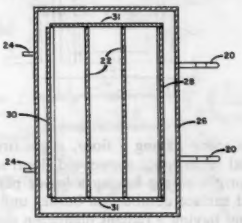
Filed Oct. 5, 1978, Ser. No. 948,868
Int. Cl.[3] A47J *37/00*
U.S. Cl. 126—25 R 8 Claims

1. A cleaning device for a cooker grill comprising:
a frame member of a heat-resistant material of a size to cover the part of the grill to be cleaned by a cleaning operation: the frame member providing a supporting grid formed of intersecting grid members, the grid having a plurality of grid openings therethrough which constitute a substantially greater area of the grid than the grid members; and a thin flexible metal sheet mounted by the frame member to be interposed between the supporting grid and a grill to be cleaned on which the device is mounted, wherein the said supporting grid has a plurality of rectangular openings of side length between 3.5 and 7 cm. the sizes of the said grid openings and the thickness of the said thin metal sheet being such that there is upward movement of the potions of the metal sheet bridging their respective openings into the openings during the cleaning operation.

4,240,399
LOG-BURNING STOVE

James R. Choate, 2409 Sampson Rd., Rochester, N.H. 03067

Continuation-in-part of Ser. No. 789,517, Apr. 21, 1977, Pat. No. 4,131,104. This application Nov. 20, 1978, Ser. No. 962,042
Int. Cl.[3] F24C *1/00*; F24B *7/00*
U.S. Cl. 126—58 8 Claims



1. A log-burning stove which comprises:
(a) a shell defining a combustion chamber for the combustion of logs;
(b) a flue for the discharge of gaseous combustion products derived from the combustion of the logs;
(c) an entrance in one wall of the shell and into the combustion chamber for the introduction of logs into the combustion chamber;
(d) a door having a peripheral frame structure and adapted to be placed in an opened or a closed position, and which door, in the closed upright position, seals the entrance of the combustion chamber, and which door, in the opened position, extends generally laterally outwardly adjacent to and from the lower bottom edge of the entrance of the combustion chamber;
(e) means to provide for the movement of the door between an opened and a closed position; and
(f) the improvement which comprises means to permit placement and support of a log on the door prior to entry into the combustion chamber, which means comprises
(i) a plurality of generally parallel, spaced-apart, fixed, thin, raised, guide-rail elements, the guide-rail elements in the upper surface and extending slightly above the inner surface of the plane of the door and the peripheral frame structure and positioned and spaced apart, so as to support between the guide-rail elements a log on the upper surface of the guide-rail elements,
(ii) the thin guide-rail elements secured to the inner surface of the door,
(iii) end brace elements extending generally perpendicular to the guide-rail elements, the end brace elements having an upper surface not greater than the upper surface of the guide-rail elements, the end brace elements adjacent to the ends of the guide-rail elements, to form with the upper and lower guide-rail elements an inner frame structure within, spaced apart from and of the general shape of the peripheral frame structure of the door, and
(iv) the guide-rail elements having a log-slidable upper surface adapted to permit a log to be slid on the upper surface of the elements and generally parallel to the entrance to the combustion chamber, so as to position the log in a desired position for entry into the combustion chamber, and whereby, on placing the door in the upright closed position, the positioned log on the guide-

rail elements is disposed into the combustion chamber of the stove.

4,240,400

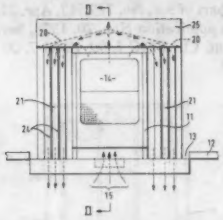
SPACE HEATER

Brian Jenkins, Birmingham, England, assignor to Holt Rogers & Co., Ltd., Worcestershire, England

Filed Jul. 24, 1978, Ser. No. 927,158

Int. Cl.³ F24C *3/04*

U.S. Cl. 126—91 R **4 Claims**



1. A room space having a floor, a gas fired space heater located in said room space above said floor, said heater comprising an upright casing having a lower part and an upper part, a sealed surface combustion burner unit located in said lower part and having a radiant plaque on one side of which combustible gas is burnt, means to feed air to the other side of said plaque, from an inlet below said floor, to provide primary air for burning of said gas, means to feed secondary air, from an inlet below said floor to the interior of said lower part on said one side of said plaque for burning of said gas, an outlet for the products of combustion at said upper part, a baffle located above said outlet to deflect said products of combustion sideways and downwards, a duct extending from a position adjacent said baffle downwardly to an exhaust located below said radiant plaque and beneath said floor.

4,240,401

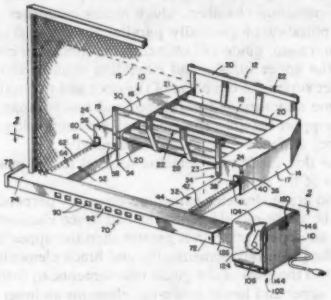
FIREPLACE HEAT EXCHANGER

Amos E. Chesnut, Columbus, and Albert J. Parrigin, Scipio, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Feb. 21, 1978, Ser. No. 879,069

Int. Cl.³ F24B *7/00;* **F23H** *13/00*

U.S. Cl. 126—121 **13 Claims**



1. A fireplace heat exchanger comprising an inlet manifold, an outlet manifold and heat exchange conduit means for providing communication therebetween, the inlet manifold, outlet manifold, and heat exchange conduit means together comprising a grate, a first duct section providing communication with the inlet manifold, the first duct section being selectively telescopically connected to the inlet manifold, a second duct section providing communication with the outlet manifold, the second duct section being selectively telescopically connected to the outlet manifold, means for adjustably positioning and holding the first and second duct sections in selected telescoped orientations relative to the inlet and outlet manifolds, respectively, a blower, and a connector duct section for providing communication between the blower and first duct section, and for providing an outlet vent for heated air and for providing communication between the second duct section and the outlet vent, the connector duct section extending generally horizontally across the front of the fireplace and having first and second ends, the first duct section being connected to the connector duct section adjacent the first end and the second duct section being connected to the connector duct section adjacent the second end, the connector duct section further including an internal baffle between the outlet vent and the first end for directing air from the first end through the first duct section, the grate, and the second duct section before being exhausted through the outlet vent.

4,240,402

GRATE FOR INDUSTRIAL FURNACES

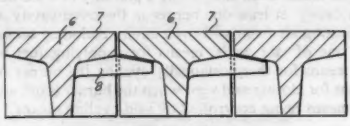
Johannes J. Martin, and Walter J. Martin, both of Munich, Fed. Rep. of Germany, assignors to Josef Martin Feuerungsbau GmbH., Munich, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,239

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805712

Int. Cl.³ F23H *13/00*

U.S. Cl. 126—152 B **10 Claims**



1. In a grate, particularly in a mechanically movable grate for use in industrial furnaces, the combination of a support; a plurality of substantially parallel elongated grate bars provided on said support and each having an end portion engaging said support, said bars further having second portions remote from the respective end portions; first coupling means for connecting said second portions of neighboring grate bars to each other against movement in a direction substantially at right angles to the longitudinal extensions of said neighboring grate bars and away from said support; and second coupling means for connecting the neighboring grate bars to each other against movement in said direction, said second coupling means being disposed intermediate said end portions and said second portions of said bars.

4,240,403

FIREPLACE STOVE

Bill B. Bader, 8501 Larch Ave., Cotati, Calif. 94928

Filed Oct. 20, 1978, Ser. No. 953,004

Int. Cl.³ E05C *19/06;* **F23L** *13/02;* **F24C** *15/02*

U.S. Cl. 126—193 **4 Claims**

1. In a fireplace stove having an access opening therein:

a door hinged on said stove to open and close said access opening:

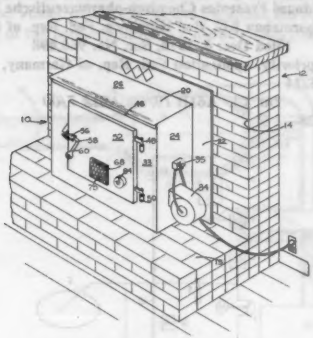
a latch shaft journalled on and disposed parallel to said door;

means for turning said latch shaft;

a pair of metal strip latch fingers having substantial flexural strength extending outward from said front wall in converging relation with a space between the distal ends thereof to receive the end of said latch shaft therebetween; said fingers being biased toward said converging relation and able to flex therefrom.

said end of said latch shaft being narrow along one cross-sec-

tional axis to be received between said fingers and relatively wide along the other cross-sectional axis to bias the



converging fingers apart when said latch shaft is rotated through about 90°.

4,240,404

HEAT PUMP HAVING A TIMER ACTIVATED FURNACE

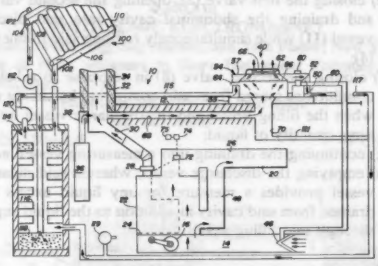
Antonino Franchina, 5219 Botsford St., Sterling Heights, Mich. 48077

Continuation-in-part of Ser. No. 968,437, Dec. 11, 1978, Pat. No. 4,202,493, which is a continuation-in-part of Ser. No. 871,493, Jan. 23, 1978, Pat. No. 4,141,490. This application Mar. 29, 1979, Ser. No. 24,969

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ F24D *11/00*

U.S. Cl. 126—427 **8 Claims**



1. A heating system for a building comprising:

a hot-air duct;

a cold-air return;

a gas furnace having an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said furnace having a combustion chamber and a heat exchanger for heating the air passing thereby from said cold-air return to said hot-air duct;

an exhaust stack for exhausting the hot gases from said combustion chamber;

a heat pump comprising a condenser with an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said condenser heating the air passing thereby from said cold-air return to said hot-air duct, said heat pump having an evaporator located externally of said building for drawing heat from the air passing thereby;

a fan for passing air by said evaporator and heat exchanger;

a first conduit means communicating the heat stack to a first chamber surrounding said evaporator so that the heat exhausted by said furnace may be drawn from the air via said evaporator and utilized to provide heat for said building, said furnace and said heat pump respectively communicating said cold-air return to said hot-air duct;

a solar panel for heating air passed therethrough having a cold solar air inlet and a solar warmed air outlet; and

a second conduit means communicating the solar warmed air to a second chamber surrounding said evaporator so that heat from the solar warmed air may be drawn from the solar warmed air via said evaporator and utilized to provide heat for said building.

4,240,405

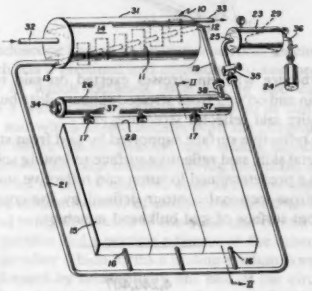
SOLAR WATER HEATER

Roger F. French, P.O. Box 158, Jackson, N.H. 03846

Filed Apr. 30, 1979, Ser. No. 34,475

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—433 **14 Claims**



1. Solar water heater making use of phase-change heat transfer, comprising:

(a) a condenser having an inlet and an outlet, which condenser is in contact with the water to be heated,

(b) a solar collector having a bottom inlet and a top outlet and having an inner conduit that connects the inlet and the outlet, the conduit being suitable for exposing a heat-transfer medium in the conduit to solar energy, the collector outlet being located below the condenser,

(c) conduits joining the outlet of the collector to the inlet of the condenser and the outlet of the condenser directly to the inlet of the collector to form a closed circuit,

(d) a phase-change liquid heat transfer medium located within the circuit,

(e) an accumulator having means for regulating the pressure therein and having an inlet that is connected to the circuit below the collector, and

(f) a vapor-release drum connected in the circuit between the outlet of the solar collector and the inlet of the condenser, wherein the vapor-release drum has sufficient volume that the upper surface of the heat transfer medium always remains within the confines of the drum so that, during normal operation of the heater only the heat transfer medium which becomes vaporized is released into the inlet of the condenser.

4,240,406

SOLAR REFLECTOR STRUCTURE

Joseph A. Hutchison, Dallas, Tex., assignor to Solar Kinetics, Inc., Dallas, Tex.

Filed Nov. 21, 1977, Ser. No. 853,213

Int. Cl.³ F24J *3/02*

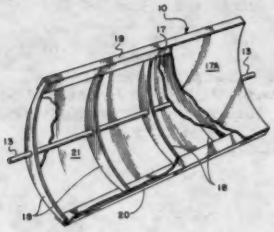
U.S. Cl. 126—438 **7 Claims**

1. A solar reflector structure comprising

(a) a plurality of rigid bulkhead members with each of said bulkhead members having a front surface and a rear sur-

face and a top and bottom outer end, said front surface of each of said bulkhead members being formed in a predetermined contour;

(b) a rear stressed sheet metal skin rigidly affixed to at least a portion of said rear surface of each of said bulkhead members and a front, stressed sheet metal skin rigidly affixed to at least a portion of said front surface of each of said bulkhead members thereby forming a monocoque



structure wherein stresses exerted on said rear stressed skin and on said front stressed skin are distributed over the entire said reflector structure; and

(c) a reflective surface supported by said front stressed sheet metal skin, said reflective surface reflecting solar radiation on a predetermined location said reflective surface having a cross-sectional contour defined by the contour of said front surface of said bulkhead members.

4,240,407

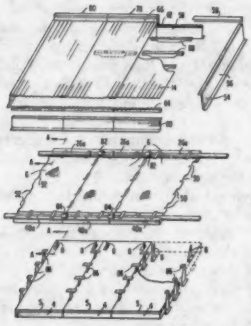
SOLAR ABSORBER PANEL, COLLECTOR ASSEMBLY AND INSTALLATION METHOD

Donald L. Spencer, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 670,764, Mar. 26, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,621

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—444 **28 Claims**



1. A solar collector assembly comprising,

a pair of solar absorber panels each having a fluid flow passage for a heat exchange fluid,

said solar absorber panels lying in side-by-side relation with their marginal portions in overlapping relation, said marginal portions having spaced-apart lateral recesses providing openings between said panels,

cover support brackets extending upwardly through said openings, and

a cover transmissive of solar radiant energy, said cover being supported on said cover support brackets.

4,240,408

PERITONEAL DIALYSIS APPARATUS

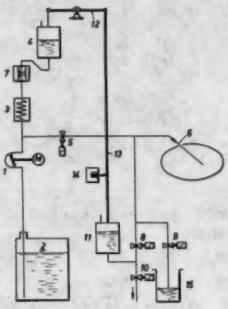
Wilfried Schael, Bad Homburg, Fed. Rep. of Germany, assignor to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,498

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755214

Int. Cl.³ A61B *19/00*; A61J *7/00*

U.S. Cl. 128—1 R **3 Claims**



1. A method for the periodic rinsing of the abdominal cavity of a patient, comprising the following steps:

(a) supporting a filling vessel (4) and a discharge vessel (11) at opposite ends of a comparing balancing means;

(b) operatively connecting both vessels through first and second valves (5, 8) to said abdominal cavity;

(c) filling said filling vessel while said first valve is closed;

(c) opening the first valve (5) for emptying the filling vessel (4) through said first valve (5) into said abdominal cavity;

(e) closing the first valve (5), opening the second valve (8) and draining the abdominal cavity into said discharge vessel (11) while simultaneously refilling said filling vessel (4);

(f) closing the second valve (8) in response to a balanced condition as sensed from said comparing balancing means when the filling vessel and the discharge vessel hold the same quantity of liquid;

(g) continuing the draining into a measuring vessel; and

(h) emptying the discharge vessel, wherein said measuring vessel provides a measure for any liquid excess being drained from said cavity in addition to the liquid supplied through said filling vessel.

4,240,409

APPARATUS FOR ASSISTING CIRCULATION OF BLOOD

William J. Robinson, Wellesley; Victor L. Poirier, Chelmsford, and Benedict D. T. Daly, Wellesley, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 21, 1979, Ser. No. 13,636

Int. Cl.³ A61B *19/00*

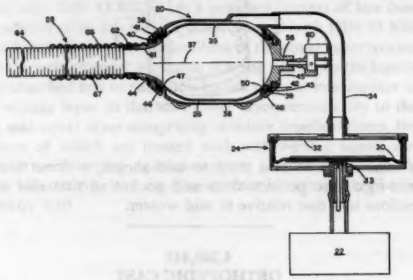
U.S. Cl. 128—1 D **6 Claims**

1. Apparatus for assisting circulation of the blood of a patient comprising:

a valveless blood pump with a housing positionable outside the patient, said pump including a flexible bladder symmetrical about a longitudinal axis of the pump, said bladder and said housing each having a first opening for admitting blood into and discharging blood from said bladder and each having a second opening for taking samples at an end opposite said first opening, said pump further including means for sealing said second openings;

a valveless flexible conduit for carrying blood between the interior of said bladder and the circulatory system of the

patient, said conduit having a first end attached to said pump adjacent to the first opening of said bladder and an implantable second end attachable to the side of a major blood vessel within the patient on either the right or left side of the patient's heart in a manner such that said con-



duit terminates without extending into the lumen of said vessel;

conduit attachment means for connecting said first end of said conduit to said pump; and

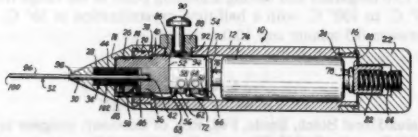
means for compressing and releasing said bladder at a controlled rate.

4,240,410

OPHTHALMIC ELECTROMAGNET

Norman C. Pickering, Sag Harbor, and Yale Fisher, New York, both of N.Y., assignors to Storz Instrument Company, St. Louis, Mo.

Filed Jan. 23, 1979, Ser. No. 6,080
Int. Cl.³ A61B *17/52*
U.S. Cl. 128—1.5 **9 Claims**



1. A miniature surgical instrument particularly adapted for removing ferrous foreign particles from an eye, said instrument comprising:

(a) a housing;

(b) a magnetizable, axially elongated probe having a body portion that is at least partially contained within said housing and a tip portion extending outwardly therefrom wherein said tip portion is made of a hydrogen-annealed Hy-Mu 80 alloy;

(c) coil means surrounding at least a part of said body portion of said probe;

(d) switch means coupled to said coil and adapted to interconnect said coil to a source of electrical energy whereby said switch means may be operated to energize said coil to thereby magnetize said probe; and

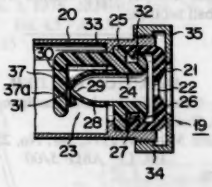
(e) battery means encompassed within said housing capable of providing electrical energy to energize said coil.

4,240,411

DEVICE FOR SEALING AN ENDOSCOPE CHANNEL

Saburo Hosono, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,428
Claims priority, application Japan, Apr. 25, 1977, 52/52438[U]
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **7 Claims**



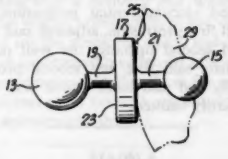
1. In an endoscope having an operation section, an elongated sheath which has a proximal end connected to said operation section and in which channels each having two ends are formed, and a sealing device which is disposed in said operation section and which communicates with the corresponding channel, the improvement wherein said sealing device comprises a hollow cylindrical member having two ends, one end being connected to one of said two ends of the corresponding channel and a tubular member of an elastic material having two ends, one end being connected to the other end of said hollow cylindrical member and a portion adjacent to the other end of the tubular member which forms a sealing portion comprising a first part formed by substantially one half of the circumference of said portion adjacent to the other end of said tubular member and a second part formed by substantially the other half of said circumference, said first part being folded and said second part being sealingly pressed against said first part.

4,240,412

MEDICAL DEVICE

Eugene James, 5413 Via Carrizo, Laguna Hills, Calif. 92653

Filed Aug. 29, 1979, Ser. No. 70,750
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—67 **3 Claims**



1. A medical device comprising:

a first relatively hard ball section, said first ball section having a smooth peripheral surface;

a second relatively hard ball section, said second ball section having a smooth peripheral surface;

an intermediate section having a peripheral surface and opposite ends;

first and second generally cylindrical sections for coupling the first and second ball sections to the opposite ends of the intermediate section;

said first and second generally cylindrical sections being of about the same length and projecting from the intermediate section in generally opposite directions;

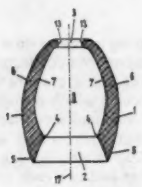
each of said first and second generally cylindrical sections having a smooth cylindrical surface;

the diameter of the first ball section being greater than the diameter of the second ball section;
the diameters of each of the first and second ball sections being greater than the diameter of each of the first and second cylindrical sections;
each of said opposite ends of said intermediate section projecting generally radially outwardly of the associated cylindrical section to define a shoulder extending radially outwardly of the associated cylindrical section;
said medical device being integrally constructed; and
said cylindrical sections being coaxial with each other and with said ball sections.

4,240,413
ERECTION HOLDER

Judith Hanus, Cham, Switzerland, assignor to Francois W. Gasser, Bern, Switzerland

Filed Mar. 21, 1979, Ser. No. 23,850
Int. Cl.³ A61F 5/00
U.S. Cl. 128—79 **8 Claims**



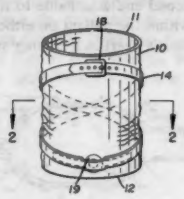
1. An erection holder destined as an auxiliary means for enabling or prolonging an erection of the penis of a man, which holder is of sleeve-like configuration and consists of an elastic material of determined extensibility, said holder comprising a body having an outer sleeve wall surface, a hollow interior surrounded by an inner sleeve wall surface, a base end destined for coming to rest, during use, against a portion of the user's abdomen surrounding the root of his penis, and an outer end away from said base end, a first opening at said base end and a second opening, substantially opposite said first opening, at said outer end, a first inwardly directed protrusion surrounding said first opening, a circumferential tapered lip portion extending substantially axially relative to said body from adjacent said first protrusion, said lip portion being adapted to flex radially outward against the user's abdomen in the mounted position of the penis for cooperation with said first protrusion to pump blood from the abdomen into said penis, a second inwardly directed circumferential protrusion, spaced outwardly from said first protrusion, adjacent said outer end and surrounding said second opening, the wall portion of said holder intermediate said first and second protrusion being curved outwardly and said inner sleeve wall surface being concavely outwardly vaulted.

4,240,414
KNEE BRACE

Charles W. Theisler, 1749 S. Raccoon Rd., Youngstown, Ohio 44515

Filed Aug. 9, 1979, Ser. No. 65,220
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 C **4 Claims**

1. A knee brace comprising an elastic tubular sheath of a length to cover the knee joint and knee cap and knee ligaments when positioned on a wearer's knee, a single non-elastic strap secured at a point midway between its ends to said sheath in a lower front portion thereof below the knee cap so as to form two free portions, fastening means attached to the ends of the free portions for securing the ends of the free portions of the strap to one another at the upper front portion of the sheath above the knee cap, the free portions of the strap being arranged to be wrapped in opposed spiral patterns around the sheath in a crisscross manner crossing behind the knee joint, a pocket formed between said strap and said sheath at the point



of attachment of said strap to said sheath, a donut shaped semi-rigid disc positioned in said pocket so that said strap tensions said disc relative to said wearer.

4,240,415
ORTHOPEDIC CAST

Lloyd H. Wartman, Norwalk, Conn., assignor to WFR/Aquaplast Corp., Ramsey, N.J.

Continuation of Ser. No. 772,090, Feb. 25, 1974, abandoned.
This application Dec. 18, 1978, Ser. No. 970,626
Int. Cl.² A61F 5/04
U.S. Cl. 128—90 **16 Claims**

1. An orthopedic cast comprised of poly (epsilon-caprolactone) having a formula

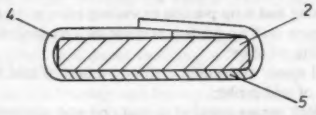
$$-O-(CH_2)_5-CO)_x$$

where x makes the weight average molecular weight greater than 5,000 subjected to electron radiation in the range from 0.5 to 15.0 megarads and having a melting point in the range from 50° C. to 100° C. with a half-time crystallization at 36° C. of between 0.5 minute and 10.0 minutes.

4,240,416
ABSORBENT STRUCTURE

Heinz-Horst Boich, Ilsede, Fed. Rep. of Germany, assignor to J. H. Benecke GmbH, Hanover, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,727
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722860
Int. Cl.³ A61L 15/00
U.S. Cl. 128—156 **4 Claims**



1. A composite flat structure having a high absorption capacity for medical and hygiene purposes, the structure comprising at least two layers having differing moisture absorption characteristics, one of the layers being a cover layer comprised

of non-woven bonding agent-free bonded synthetic fibres and another of the layers being a storage layer located below the cover layer, the storage layer having a higher moisture absorption capacity than the cover layer, said cover layer being treated with a wetting agent and having a moisture absorption capacity such that, after adaptation to normal climate in accordance with DIN 53 802, it has a moisture content of less than 6% relative to its dry weight in accordance with DIN 53 800, and wherein the surface of the fibres of the cover layer treated with the wetting agent is capable of being wetted by the liquids to be absorbed and to pass such liquids without interruption to said storage layer so that said cover layer remains dry to the skin, said cover layer comprising moisture repellent fibres, the surfaces of which are treated with said wetting agent, and wherein said wetting agent comprises a reaction product of castor oil and ethylene oxide reacted in a molar ratio of substantially 1:40.

4,240,417

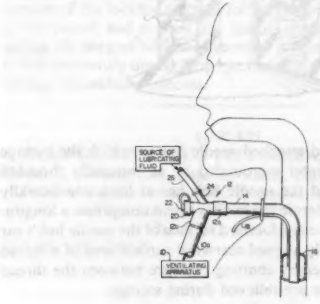
TRACHEAL TUBE ADAPTER FOR VENTILATING APPARATUS

Bernard K. Holever, 241 Cottonwood Rd., Newington, Conn. 06111

Filed Jun. 13, 1979, Ser. No. 48,095

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—203.12 **4 Claims**



1. An adapter for coupling several different devices to a tracheal tube without disconnecting the patient from a ventilating apparatus, said adapter comprising means defining a chamber and including a tracheal tube port communicating with said chamber and a respiratory port communicating with said chamber oriented at a substantial angle with respect to said tracheal tube port, means defining an opening communicating with said chamber for the insertion of a vacuum tube or the like, removable cap means for selectively closing said vacuum tube opening, means defining a port communicating with said chamber for the selective injection of a lubricating fluid into the tracheal tube, and one-way check valve means in said last mentioned port to prevent the expelling of liquids from the patient's lungs into the atmosphere.

4,240,418

APPARATUS FOR THE INHALATION OF MEDICINAL AGENTS

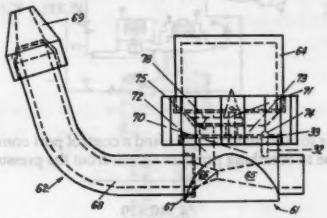
Gunter Rosskamp; Reiner Kolberg; Peter Gunzel, and Hans-Jurgen Porep, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 807,269, Jun. 16, 1977, abandoned, which is a division of Ser. No. 606,737, Aug. 21, 1975, Pat. No. 4,046,146. This application Feb. 28, 1979, Ser. No. 16,042

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1974, 2440623; Jun. 2, 1975, 2524902; Jun. 30, 1975, 2529522

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—203.15 **5 Claims**



1. Apparatus for the inhalation of medicinal agents as an aerosol effluent induced by inhalation from the apparatus, comprising a housing having a venturi tubeshaped interior configuration presenting a narrow venturi constriction and including a funnel-shaped air inlet chamber having an open upstream end from which the chamber wall converges inwardly to the venturi constriction, a combined diffuser zone and an aerosol exhaust section separated from the air inlet chamber by the narrow venturi constriction, said exhaust section being elongate from the downstream end of the diffuser zone to provide an applicator having a terminal opening for insertion in a breath inhaling body orifice, the diffuser zone having its wall converging inwardly to the venturi constriction with the minimum diameter of the venturi constriction forming a longitudinally relatively short transverse venturi constrictive junction positioning the inner ends of the converging walls of the inlet chamber and the diffuser zone in proximate adjacency, said housing having a vertically disposed dispensing passage in oriented position for use transverse to the longitudinal axis of the housing and extending through one of said converging walls with a delivery end which terminates in adjacency to the venturi constriction of the venturi-like housing, a container for the medicinal agent, and means mounting said container in superposed position on said housing with the dispensing passage depending therefrom for selective dispensing of the medicinal agent through said dispensing passage by gravity to the delivery end thereof.

4,240,419

BREATHABLE GAS DELIVERY REGULATORS

Owen D. Furlong, West Coker, and Robin H. Thring, Yeovil, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Sep. 25, 1978, Ser. No. 945,477

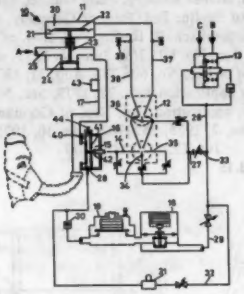
Claims priority, application United Kingdom, Sep. 26, 1977, 40056/77

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.23 **15 Claims**

1. A breathable gas delivery regulator comprising a gas inlet for receiving a breathable gas and a gas outlet for connection to a user, a demand valve controlling communication between said gas inlet and said gas outlet, a pressure sensor for sensing the user's breathing pressure, and a servo mechanism for operating the demand valve in response to breathing pressure sig-

nals from said pressure sensor, characterised in that said servo mechanism comprises a fluidic amplifier having an output to an



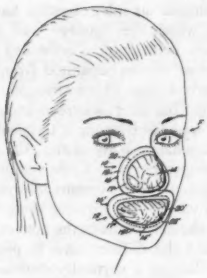
actuator for the demand valve and a control port connected for response to breathing pressure signals from the pressure sensor.

4,240,420

NOSE AND MOUTH FILTER COMBINATION

Florence Riaboy, 4819 Sorrento Ct., Cape Coral, Fla. 33904

Filed Apr. 16, 1979, Ser. No. 30,520
Int. Cl.[3] A62B 7/00
U.S. Cl. 128—206.14 **1 Claim**



1. Individual nose and mouth filters, in combination, comprising a pair of central filter elements, formed of a suitable flexible filter material, a first of which is sized to loosely cover a predetermined lower area of the nose including the nostrils, and a second of which is sized to loosely cover the mouth area, each of said first and second filters including an outwardly extending peripheral portion and being provided with a continuous strip of one-sided pressure sensitive adhesive tape including an inner peripheral adhesive portion secured to said filter materials outwardly extending peripheral portion and an outwardly extending peripheral adhesive portion for secure engagement with a predetermined facial skin area of a user, the pressure sensitive tape portion of one of the filters overlying and bonded to the pressure sensitive tape portion of the other filter.

4,240,421

SYRINGE SHIELD FOR RADIOACTIVE MATERIALS

James R. Carr, 2843 Aquarius Ave., Silver Spring, Md. 20906

Filed Jun. 26, 1979, Ser. No. 52,436
Int. Cl.[3] A61B 6/00
U.S. Cl. 128—215 **1 Claim**

1. In combination, a hypodermic syringe having a barrel of given length, and a shield therefor protecting a user against radioactive materials carried by said barrel, said shield including a radially flexible resilient synthetic resinous inner sleeve member of arcuate cross section extending over an arc substantially greater than 180 degrees, and bounded by an inner surface of curvature corresponding to that of the outer surface of said barrel when said sleeve is in relatively unstressed condition, and being in substantial contact with the outer surface of said barrel under relatively light tension, said sleeve member

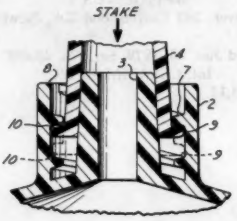
having an outer arcuate surface; and an outer shield member of lead secured to said outer surface of said sleeve member of thickness ranging from one to two millimeters; said shield having an axial link substantially less than that of said given length, and being resiliently retained on said barrel for sliding movement there along.

4,240,422

SYRINGE WITH NEEDLE AND METHOD OF ATTACHING SAME

Thomas A. Hazen, Glendale, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,604
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—218 N **6 Claims**



1. A syringe and attached needle hub in which the syringe has a tapered adapter surrounded by an internally threaded locking sleeve and the needle hub has at least one laterally protruding ear, wherein the improvement comprises: a longitudinal spacing between a forward surface of the needle hub's ear and a longitudinally aligned rearward surface area of a thread on the sleeve, whereby abutting pressure between the thread and needle hub ear are relieved during storage.

4,240,423

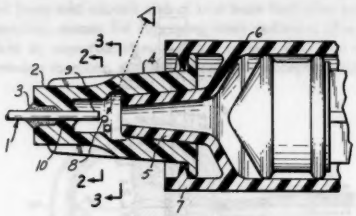
AUTOCLAVABLE TRANSPARENT NEEDLE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,605
Int. Cl.[3] A61M 5/32
U.S. Cl. 128—218 N **7 Claims**

1. An autoclavable needle comprising: a metal cannula; an epoxy capable of firmly bonding at temperatures in excess of 200° F., which epoxy is permanently secured to the cannula; and permanently secured to this epoxy is a transparent polycar-

bonate hub having a deflection temperature in excess of 200° F., whereby both the metal-epoxy joint and the epoxy-polycarbonate joint remain firm when exposed to temperatures in excess of 200° F.

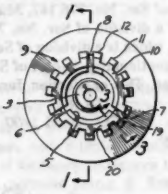


4,240,424

SYRINGE LOCKING SLEEVE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,607
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 R **9 Claims**



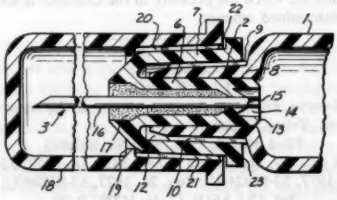
1. A thermoplastic syringe barrel with an integral laterally flexible thermoplastic locking member having a longitudinal axis, wherein the improvement comprises: an inner retention portion of the locking member for securing a needle or the like to the barrel; and at least one longitudinally extending outer spring rib integral with the retention portion said rib adapted to flex outwardly during strip ejection and without unscrewing during the molding process.

4,240,425

SYRINGE WITH PLUG TYPE NEEDLE HUB LOCK

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,608
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **13 Claims**



1. A syringe coupling system with a hub having an internal plug and an external skirt permanently securing a tubular syringe adapter therebetween, wherein the improvement comprises: a longitudinally extending rib capable of longitudinal strip ejection from a mold without substantial distortion on one of the hub and adapter wedgingly secured against the other; and said plug and skirt are spaced sufficiently close to each other to grippingly force the longitudinal rib against the hub or adapter to prevent longitudinal separation of the hub and adapter by manual force during use.

4,240,426

SYRINGE COUPLING SYSTEM

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,609
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **2 Claims**

1. A syringe coupling system comprising: a cylindrical metal cannula; a polycarbonate needle hub with a longitudinal axis; which hub has a hollow forwardly opening pocket at its forward end, the pocket having an inner surface that is spaced from the metal cannula by a distance that is approximately constant or increases in a forward direction along the length of the pocket without any substantial transverse groove or undercut recess into the pocket's inner surface; an epoxy in the pocket bonding the metal cannula to the polycarbonate inner wall of the pocket with the metal-epoxy-polycarbonate joint capable of withstanding a longitudinal separation force of approximately 30 lbs. or more without the cannula pulling out of the hub; said hub having a hollow internally tapered section at its rear end; and a syringe barrel with an externally tapered adapter of a thermoplastic softer than polycarbonate wedgingly fitted into the hub's internal tapered section with the adapter being free of substantial external compression forces prior its assembly to the hub, whereby the hub will reliably stay on the adapter until intentionally removed and the hub will securely support the cannula.

4,240,427

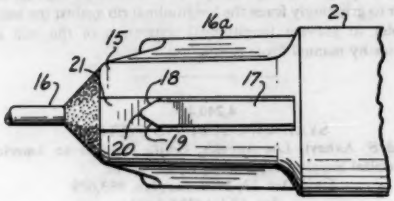
NEEDLE WITH PROTECTOR

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,610
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 N **8 Claims**

1. A needle hub and protector with interfitting ribs, wherein the improvement comprises: at least one rib on the needle hub having a forward end with a rotational shifting surface; and at least one rib on the protector having a rearward end with a

rotational shifting surface, whereby said surfaces can engage each other during axial sliding of the needle hub into the protector and automatically prevent rib abutment jamming during assembly.



4,240,428

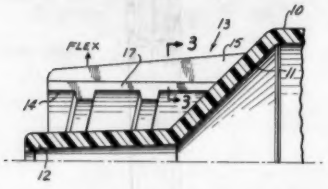
SEGMENTED SYRINGE LOCKING SLEEVE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,689

Int. Cl.[3] A61M 5/00

U.S. Cl. 128—218 R 7 Claims



1. A thermoplastic syringe barrel with a front wall integrally joined to a circumferentially interrupted locking sleeve with internal threads, wherein the improvement comprises: said sleeve having at least one slot that extends to within 0.050 inch of the barrel's front wall to enhance mold release flexing of the sleeve for axial strip ejection from a mold during formation and firm locking control during use.

4,240,429

NEEDLE INJECTION DEVICE FOR DELIVERING FLUID

Carl L. Shackelford, San Pablo, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Filed Jun. 14, 1979, Ser. No. 48,441

Int. Cl.[3] A61M 5/00

U.S. Cl. 128—218 NV 10 Claims

1. A needle injection device for delivering fluid through an opening in a body comprising:

a. a first bushing adapted for substantially surrounding at least a portion of the needle, said first bushing having first and second end portions;

b. a second bushing adapted for substantially surrounding at least a portion of the needle, said second bushing having a first end portion and a second end portion, said first end portion of said first bushing being adjacent said second end portion of said second bushing, said second bushing adapted for being at least partially within the opening in the body and being constructed of sealing material;

c. means for filtering the fluid intended for passage through the opening, said filtering means being adjacent said first end portion of said second bushing;

d. means for forcing said first end portion of said first bushing into contact with said second end portion of said second bushing and for forcing said first end portion of said second bushing into contact with said filtering means

such that said second bushing seals the exterior of the needle and the sides of the opening.

4,240,430

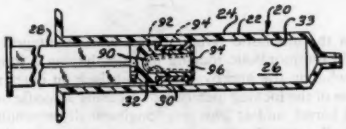
SYRINGE ASSEMBLY

William J. Binard; Anthony J. Ciarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 853,962, Nov. 22, 1977, abandoned, which is a division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Jun. 29, 1979, Ser. No. 53,482

Int. Cl.[3] A61M 5/00

U.S. Cl. 128—218 P 1 Claim



1. A syringe, comprising:

a transparent barrel having a chamber for retaining fluid;

an elongated plunger having one end received in and closing the chamber for pumping fluid out of the chamber, said one plunger end including a hollow transparent member having a cavity facing the chamber through an opening and being visible outside the barrel, means for sealingly engaging against an inner surface of the barrel, and an elastic diaphragm being permanently secured to the plunger and extending across said opening and closing the cavity, said diaphragm flexing into the transparent member responsive to a predetermined pressure in the chamber to indicate when the pressure in the chamber is above the predetermined amount.

4,240,431

LASER KNIFE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,841

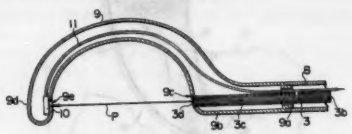
Claims priority, application Japan, May 16, 1977, 52-56635; May 16, 1977, 52-62824[U]; Jun. 24, 1977, 52-83289[U]

Int. Cl.[3] A61B 17/36; H23K 9/00

U.S. Cl. 128—303.1 18 Claims

1. A laser knife comprising a tubular member adapted to be inserted into the forceps channel of an endoscope, a laser radiation transmission member having a first end and a second end, said laser radiation transmission member being disposed

within said tubular member for conveying laser radiation therethrough so that laser radiation can be conveyed from said first end of said laser radiation transmission member to be emitted from said second end of said laser radiation transmission member, means for supplying laser radiation of a power sufficient to vaporize human tissue to said first end of said transmission member, acceptor means for accepting said laser



radiation emitted from said second end of said laser radiation transmission member upon completion of cautery of an affected part achieved by said laser radiation, and for producing an electrical signal in response to said laser radiation, and laser control means for terminating the transmission of said laser radiation through said laser radiation transmission member in response to said electrical signal produced by said acceptor means.

4,240,432

MUCOUS MEMBRANE CUTTER FOR MUCOGINGIVAL MEMBRANE SURGERY

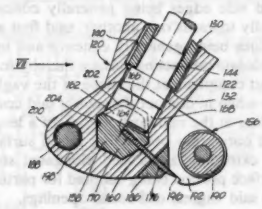
Werner Mörmann, Zürich, Switzerland; Gerhard Bofinger, Immendingen-Hattingen, and Wilfried Wölfle, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

Continuation of Ser. No. 873,935, Jan. 31, 1978, Pat. No. 4,211,232. This application Sep. 13, 1979, Ser. No. 75,313

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707523

Int. Cl.[3] A61B *17/322*

U.S. Cl. 128—305.5 **12 Claims**



1. In a mucotome having a handle and a cutting head arranged at one end of the handle, said cutting head including a blade holder carrying a cutting blade with a cutting edge and a cutting shoe for determining the cutting depth of said cutting blade, said cutting shoe having a guide for said blade holder, along which said blade holder is reciprocally movable parallel to said cutting edge by means of a rotatable drive shaft at said cutting head, having an eccentric crank pin engageable in a cross groove in said blade holder, the improvement comprising said blade holder including a straight prismatic blade-holding bar having a longitudinally extending slit to said cutting edge for receiving said cutting blade, said cutting blade projecting out of said slit, said cutting shoe having an opening through which said cutting blade projects.

4,240,433

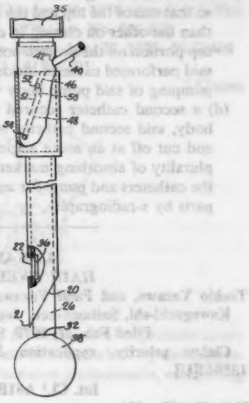
FLUID ASPIRATION DEVICE AND TECHNIQUE FOR REDUCING THE RISK OF COMPLICATIONS

Richard A. Bordow, 6114 Terryhill Dr., La Jolla, Calif. 92037

Filed Jul. 22, 1977, Ser. No. 818,016

Int. Cl.[3] A61B *17/34*; A61M *1/00*

U.S. Cl. 128—347 **15 Claims**



1. Apparatus for aspirating fluid from a body cavity, which comprises:

elongated substantially hollow needle means having a sharp tip at one end thereof for facilitating entry to a body cavity;

elongated substantially hollow cannula means being movably disposed within said needle means, said needle means having an opening at said one end sized such that said cannula means may be slid through said opening;

selectively inflatable balloon means connected to said cannula means so as to be positionable, upon inflation, between said tip and internal organs near said cavity for reducing the risk of puncture of said internal organs by said tip;

a first fluid intake port in the wall of said needle means spaced from said opening; and

a second fluid intake port positioned in the wall of said cannula means so as to be registrable with said first fluid intake port to permit flow therethrough.

4,240,434

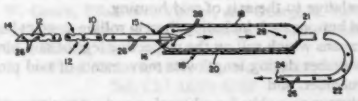
PERITONEO-VENOUS SHUNT

John B. Newkirk, Rte. 2, Box 302EE, Evergreen, Colo. 80439

Filed Oct. 10, 1978, Ser. No. 949,734

Int. Cl.[3] A61M *25/00*

U.S. Cl. 128—350 V **5 Claims**



1. An ascites shunt for completely implanting in a patient comprising:

(a) a flexible semi-rigid medically acceptable catheter for implanting in the peritoneal cavity of a patient, said catheter having an open end cut at an acute angle and a substantial portion of said catheter adjacent said open end being perforated to facilitate entry of liquid into the shunt system:

(b) a pump body secured to and in communication with the

distal end of said catheter opposite said perforated end, consisting of an enlarged, flexible, roughly tubular member of medically acceptable material;

(c) an asymetrical, one way miter valve formed as a normally closed tubular slit valve having a flatten end at the slit with a top portion and a bottom portion for one way fluid flow through the slit and constructed and arranged so that one of the top and the bottom portions moves more than the other on closing to cause a rubbing action of the top portion on the bottom portion, mounted on the end of said perforated catheter inside said pump body permitting pumping of said pump body with no reverse flow; and

(d) a second catheter secured to the outlet of said pump body, said second catheter being flexible and having its end cut off at an acute angle with a single end outlet, a plurality of absorbing markers secured in the material of the catheters and pump for ascertaining positioning of the parts by x-radiography.

4,240,435

HAIR TWEEZERS

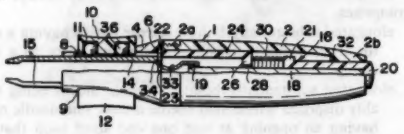
Toshio Yazawa, and Fumi Yazawa, both of 6-11-15, Motogo, Kawaguchi-shi, Saitama-ken, Japan

Filed Feb. 27, 1979, Ser. No. 15,666

Claims priority, application Japan, Oct. 3, 1978, 53-135842[U]

Int. Cl.³ A61B *17/30*

U.S. Cl. 128—354 **9 Claims**



1. Tweezers for removing hair comprising:

a cylindrical housing which has openings at one end portion thereof;

said openings being opposite to each other relative to the axis of said cylindrical housing,

a stopper member connected to the inside of said cylindrical housing;

a pincette member which has two symmetrical legs connected with each other at one end thereof;

said pincette member having tips at the other end thereof for securing a hair,

buttons secured in said openings of said cylindrical housing;

said pincette member being mounted for lengthwise movement in said housing between a retracted and an advanced position, said pincette member engaging said stopper member when in said advanced position, said buttons each being movable in a perpendicular direction relative to the axis of said housing,

said buttons each including therein rolling contact bearing means which roll on the respective legs of said pincette member during lengthwise movements of said pincette member, and

an actuator assembly for advancing and retracting said pincette member;

said actuator assembly comprising a shaft connected to the end of said pincette member, a first sleeve disposed on the inside of said housing, a second sleeve connected to said shaft, and a spiral spring disposed between said first and second sleeves,

whereby when said buttons are pressed, the pincette member is disengaged from said stopper member to thereby retract said pincette member while said pincette member is holding the hair.

4,240,436

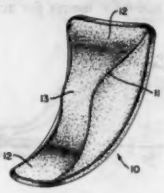
THERAPEUTIC COLD PACK

Rosa R. Singleton, 3106 Edgewood Ave., Richmond, Va. 23222

Filed Aug. 31, 1978, Ser. No. 938,336

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—403 **4 Claims**



1. A disposable cold pack having a preformed anatomical shape for treatment of the vaginal and rectal regions comprising:

A hollow anatomically-shaped cold storage pack that includes a cold storage medium, said cold storage pack being a unitary structure that completely encapsulates therein said cold storage medium, the combination of said cold storage pack and said cold storage medium being preformed such that it fits against said vaginal and rectal regions without requiring manipulation of said cold pack, an elongated base having a vaginal end and a rectal end, and two side edges, said base being preformed with a curve along its length and said curve generally conforming to the curve of the perineal area from the vaginal region to the rectal region, said rectal end being relatively narrower than said vaginal end, said two edges being concave and extending between said vaginal and rectal ends, said edges converging from said vaginal end inwardly towards said relatively narrower rectal end thereby being complementary to and readily conforming to the shape of the vaginal and rectal regions, first and second side portions extending upwardly from said side edges of said base and angled towards one another, and an elongated upward contacting surface extending from said vaginal end to said rectal end of said base and connecting the upper edges of said first and second side portions to form an enclosure, said contacting surface having side edges extending from said vaginal end to said rectal end of said base, said side edges being generally concave and curved inwardly towards one another, said first and second side portions being generally concave and inwardly curved towards said contacting surface thereby to readily conform to and complement the shape of the vaginal and rectal regions when in contact therewith, said contacting surface including at the mid-portion thereof a lengthwise elongated and outwardly protruding raised surface portion partially extending along said elongated structure, said raised surface portion being adapted for partial insertion into both said vaginal and rectal openings.

4,240,437

ELECTRIC MASSAGE APPARATUS AND METHOD

Charles J. Church, P.O. Box 1214, Middleburg, Va. 22117

Continuation-in-part of Ser. No. 819,912, Jul. 28, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,146

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—420 R **35 Claims**

1. Apparatus for treatment of animals comprising:

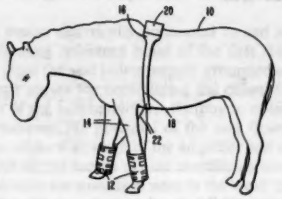
first electrode means;

a first flexible member adapted to be fastened on an animal to hold said first electrode means in contact therewith;

second electrode means;

a second flexible member adapted to be fastened on the animal to hold said second electrode means in contact therewith;

circiuit means connected to said first electrode means and to said second electrode means and capable of assuming an off condition, in which no electrical potential is applied across said first and second electrode means, a first on condition, in which a pulsating electrical potential having a first pulse characteristic, including pulse repetition rate, pulse amplitude, and pulse polarity, is applied across said first and second electrode means, and a second on condi-



tion, in which a pulsating electrical potential having a second pulse characteristic, including pulse repetition rate, pulse amplitude, and pulse polarity, is applied across said first and second electrode means; and

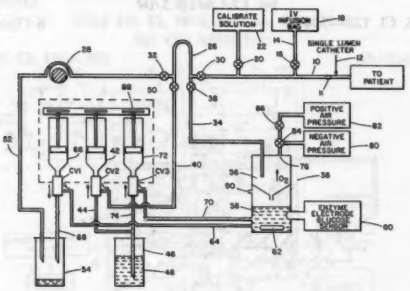
control means connected to said circuit means and activatable to cause said circuit means to assume its first on condition for a first preset time, to then assume its second on condition for a second preset time, and to then assume its off condition.

4,240,438

METHOD FOR MONITORING BLOOD GLUCOSE LEVELS AND ELEMENTS

Stuart J. Updike, and Mark C. Shults, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 2, 1978, Ser. No. 947,949
Int. Cl.[3] A61B *5/00*; G01N *27/26*
U.S. Cl. 128—635 **16 Claims**



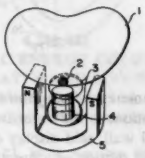
1. A method for monitoring blood glucose levels consisting essentially of the steps of withdrawing patient's whole blood, uniformly oxygenating increments of the patient's withdrawn blood by contacting the increment of withdrawn patient's blood with air for a sufficient length of time to effect oxygen equilibration, transferring the increment of blood after air-oxygen equilibration to a sensor having an electrode covered with a hydrophobic membrane having an etched hydrophilic surface on which glucose oxidase is immobilized whereby oxygen is consumed by reaction with glucose in the blood in the presence of the glucose oxidase, measuring rate of change in oxygen tension resulting from the reaction of glucose in the blood, said rate of change being proportional to the glucose concentration in the blood, and diluting the increment of patient's blood before measuring for rate of change in oxygen tension.

4,240,439

METHOD OF OBTAINING INFORMATION OF A SPECIFIED OR TARGET AREA OF A LIVING BODY NEAR ITS SKIN SURFACE BY THE APPLICATION OF A NUCLEAR MAGNETIC RESONANCE PHENOMENON

Zenuemon Abe, Sapporo; Kunio Tanaka, Asahikawa, and Fumio Sano, Sapporo, all of Japan, assignors to Hokkaido University

Continuation of Ser. No. 653,734, Jan. 30, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 901,078
Claims priority, application Japan, Apr. 30, 1975, 50-52408
Int. Cl.[3] A61B *5/05*
U.S. Cl. 128—653 **7 Claims**



1. A method of obtaining information of a predetermined target area in a living body near its skin surface by the application of a nuclear magnetic resonance phenomenon, comprising the steps of:

providing a static magnetic field generator in close proximity to said target area for generating a static magnetic field H_0;

providing a radio-frequency magnetic field generator in close proximity to said target area for generating a radio-frequency magnetic field H_1 having a nuclear magnetic resonance frequency f_0;

providing said radio-frequency magnetic field H_1 as a local inductive magnetic field;

applying said magnetic fields H_1 and H_0 to said target area so that said fields perpendicularly intersect each other in said target area;

focusing at least one of said magnetic fields onto a predetermined point coincident with said target area;

disposing a means for signal isolating said target area from its surrounding area adjacent to said target area to permit said at least one focused field from causing nuclear magnetic resonance signals in said surrounding area;

disposing a nuclear magnetic resonance signal detector approximately to said target area;

detecting and measuring a nuclear magnetic resonance signal from said target area.

4,240,440

METHOD AND APPARATUS FOR NUCLEAR KYMOGRAPHY PROVIDING A MOTION VERSUS TIME DISPLAY OF THE OUTER TRANSVERSE DIMENSIONS OF AN ORGAN

Mark W. Groch, Elk Grove Village, and George K. Lewis, Arlington Heights, both of Ill., assignors to Siemens Gammasonics, Inc., Skokie, Ill.

Filed Nov. 17, 1977, Ser. No. 852,418
Int. Cl.[3] A61B *6/00*
U.S. Cl. 128—654 **30 Claims**

1. A method of producing a quantitatively evaluatable presentation of periodic regional myocardial wall motion of a cardiovascular system utilizing nuclear analysis, said method comprising the steps of:

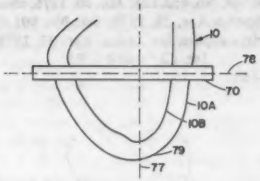
causing nuclear radioactivity to radiate from at least a portion of said cardiovascular system;

receiving the energy distribution of said radiated energy as positional events along a predetermined imaging axis as a function of time;

accumulating a plurality of successive positional energy

distributions in synchronism with said periodic regional myocardial motion; and

presenting said accumulated plurality of successive positional energy distributions in the form of a display depicting a unidimensional parameter versus time, said unidimensional parameter defining the outer transverse dimensions and variations in the outer transverse dimensions in the myocardial wall, said display depicting said regional myocardial wall motion as a function of time in order to determine selected parameters of said regional myocardial wall motion.

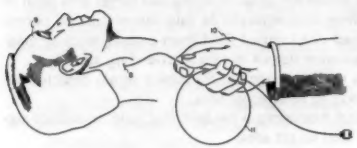


4,240,441

CAROTID THERMODILUTION CATHETER

Hassan H. Khalil, Alexandria, Egypt, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 950,196
Int. Cl.³ A61B 5/02
U.S. Cl. 128—692 **8 Claims**



1. In a bioelectric measuring apparatus for insertion within an internal carotid artery of a living organism, including in combination, an elongated, flexible body, an electrical heater mounted thereon, and a temperature sensing device also mounted on said catheter body, the improvement comprising:

temperature transducing means mounted on said catheter body for sensing the temperature rise of said catheter body produced by said electrical heater; and

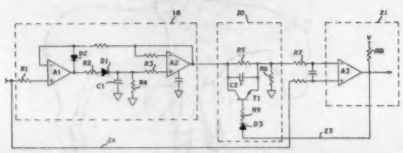
wherein said temperature sensing device and said electrical heater include wire windings having dimensions to facilitate compact placement within said organism and to achieve a predetermined surface area to blood volume flow ratio of from about 0.08 $mm^2/ml/min.$ to about 0.42 $mm^2/ml/min.$

4,240,442

VARIABLE THRESHOLD R-WAVE DETECTOR

Richard P. Andresen, Belmont; Robert M. Armington, Boston; Robert L. Cannon, III, Waltham, and Andrew J. Griffin, Framingham, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 883,096, Mar. 3, 1978, Pat. No. 4,181,135.
This application Jan. 5, 1979, Ser. No. 1,108
Int. Cl.³ A61B 5/04
U.S. Cl. 128—708 **7 Claims**



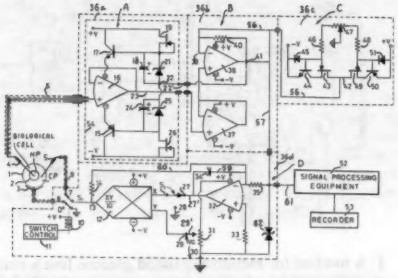
1. An improved R-wave detector comprising means responsive to a continuous ECG waveform having a series of R-waves therein for providing a value representative of the peak height of at least one R-wave in an immediately preceding limited plurality of R-waves, automatically variable scaling means for scaling one of the instant said ECG waveform and said peak height representing value to be a controllably variable percentage of the other, means for comparing said scaled one of the instant said ECG waveform and said peak height representing value with the other and providing a signal indicative of R-wave occurrence when the instant ECG waveform-based signal exceeds the peak height representing value based-signal; and means responsive to a said signal indicative of R-wave occurrence for automatically varying said scaling percentage of said variable scaling means.

4,240,443

SELECTIVE PREAMPLIFIER OF CELL POTENTIALS

Vicentiu L. Ionescu, Bucharest, Romania, assignor to Institutul de Stiinte Biologice—Bucharest, Bucharest, Romania

Filed May 10, 1978, Ser. No. 906,232
Int. Cl.³ A61B 5/04
U.S. Cl. 128—734 **6 Claims**



1. Apparatus for the selective detection and amplification of intranuclear and/or intracellular biopotentials comprising:

a first metallic microelectrode for collecting the intracellular and/or intranuclear action biopotentials adapted to be inserted into a biological cell;

a double screened central wire lead having two screening sheaths connected to said first metallic microelectrode;

an amplifier with unity gain control having a sufficient sensitivity to action biopotentials released by cells with a very high internal resistance, the amplifier having an input terminal and an output terminal and a plurality of stages, the input terminal of said amplifier being the input termi-

nal of the first stage of the amplifier, said input terminal being directly coupled with the said first metallic microelectrode through the central wire of the said double screened lead, the first stage of the amplifier having a floating reference point;

a power supply circuit providing the feeding terminals of all active and passive electronic circuits and components of the said apparatus with two equal and of contrary sign stabilized voltages in comparison with a grounded null point;

first circuit means electrically connected to and separating the said floating reference point of the first stage of the amplifier from the said power supply grounded null point;

second circuit means for neutralizing the offset voltages in the stages of the said amplifier, whereby to obtain a good equality between the potential of the said floating reference point of the first stage of the amplifier and the biopotential applied, by means of said metallic mircoelectrode and said double screened lead wire to the input terminal of the said first stage, and an extremely low input capacity as well as high input resistance to the input terminal of said first stage of the amplifier;

a second metallic microelectrode functioning as a first reference electrode means for the power supply circuit allowing the first microelectrode to collect the intranuclear biopotentials only and adapted to be inserted in said biological cell; and

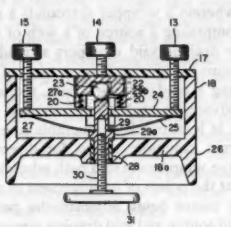
a third metallic electrode functioning as a second reference electrode means for the power supply circuit, adapted to be placed closely upon the outer surface of the cell, for allowing the first microelectrode to collect the intracellular biopotentials or both intranuclear and intracellular ones, in relation to the tip position of said first metallic microelectrode in the interior plasma of the cell under study.

4,240,444

APPARATUS FOR SENSING COUGHS

James A. Virgulto, 119 Terrace Ave., West Haven, Conn. 06516, and Peter E. Snyder, 11 Hurd Bridge Rd., Clinton, Conn. 06413

Filed Jul. 31, 1978, Ser. No. 929,637
Int. Cl.³ A61B 5/10
U.S. Cl. 128—782 **13 Claims**



1. A cough sensor comprising:

an annular axially extending housing;

sensing means mounted to the housing including a shaft member extending axially of the housing with a radially extending disc member on its proximal end, a concentric collar connected to the shaft and forming a distal end thereof, a leaf spring member interposed between the housing and the shaft member to resiliently urge the disc beyond the housing having a centrally located aperture through which a portion of the concentric annular collar member passes, a flange member connected to the collar member having a first shoulder bearing against the leaf spring in juxtaposition to the aperture and a second opposed shoulder, and a stop member on the housing bearing against the second shoulder for limiting axial extension of the disc beyond the housing;

means operatively associated with the housing and the sensing means to generate signals relative to movement of the shaft with respect to the housing; and

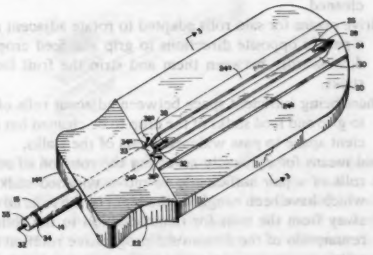
attachment means connected to the housing for securing the cough sensor in a predetermined location and attitude on the body so that the annular housing is in contact with and the disc member axially extends toward the body.

4,240,445

ELECTROMAGNETIC ENERGY COUPLER/RECEIVER APPARATUS AND METHOD

Magdy F. Iskander, Midvale, and Carl H. Durney, Salt Lake City, both of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Oct. 23, 1978, Ser. No. 954,054
Int. Cl.³ A61N 1/40
U.S. Cl. 128—804 **8 Claims**



1. An apparatus for coupling electromagnetic energy into a material comprising:

a substrate body of dielectric material, the body having an external surface;

an open transmission line mounted at the external surface of the dielectric substrate to accommodate access to electromagnetic fields adjacent the open transmission line, the open transmission line serving as an inducing means for inducing electromagnetic energy into the material and comprising a central strip conductor and a ground plane conductor, the central strip conductor being surrounded in spaced relationship by the ground plane conductor, the open transmission line further comprising a resistor electrically interconnecting the central strip conductor and the ground plane conductor; and

means for connecting the open transmission line with a source of electrical energy to thereby allow the open transmission line to operate as an inducing means.

7. A microwave coupler for coupling microwave energy to tissue comprising:

a dielectric substrate configurated with a surface adapted to be placed against the tissue;

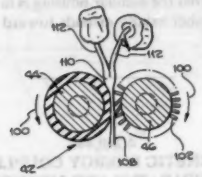
an open transmission line mounted to the surface of the dielectric substrate, the open transmission line comprising a central strip conductor, a ground plane conductor, and a resistor, the central strip conductor being surrounded in spaced relationship by the ground plane conductor and electrically interconnected to the ground plane conductor by the resistor; and

means for connecting the open transmission line to a source of electromagnetic energy, the electromagnetic energy inducing microwave energy in the open transmission line.

4,240,446
VINE CROP HARVESTER

Robert J. Raymond, 956 Diamond Dr., Santa Maria, Calif. 93454

Filed Nov. 13, 1978, Ser. No. 959,461
Int. Cl.³ A01D 45/00
U.S. Cl. 130—30 R 7 Claims



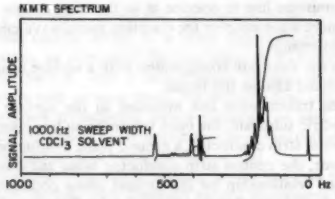
1. In a vine crop harvester,
an ambulatory frame,
a plurality of crop cleaning rolls supported by said frame and having spaced cylindrical surfaces,
the diameter of the crop cleaning rolls being less than the length of the crop stalks from which the crop is to be cleaned,
drive means for said rolls adapted to rotate adjacent rolls of a pair in opposite directions to grip and feed crop stalks downwardly between them and strip the fruit from the stalks,
there being sufficient space between adjacent rolls of a pair to grip and feed stalks of the crop to be cleaned but insufficient space to pass widened joints of the stalks,
and means for cyclically reversing the rotation of adjacent rolls of a pair sufficiently to move widened stalk joints which have been caught in the bight of the rolls upwardly away from the rolls for reintroduction to the rolls upon resumption of the downward progressive rotation of said rolls.

4,240,447
USE FOR PREPARING SMOKING TOBACCO COMPOSITIONS OF SPIROPYRAN DERIVATIVES

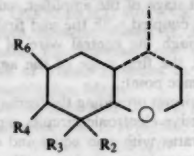
John B. Hall, Rumson; Denis E. Hruza, Sr., Brick Town, both of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 765,629, Feb. 4, 1977, abandoned, which is a division of Ser. No. 701,249, Jun. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 547,057, Feb. 4, 1975, abandoned. This application Apr. 6, 1979, Ser. No. 27,948
Int. Cl.³ A24B 3/12
U.S. Cl. 131—9 8 Claims

EXAMPLE I



1. A smoking tobacco composition comprising smoking tobacco and intimately admixed therewith an organoleptically augmenting, enhancing or modifying quantity of a spiropyran material defined by the generic structure:

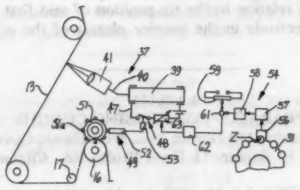


wherein R_2, R_3 and R_6 are each selected from the group consisting of hydrogen and methyl; wherein R_4 is selected from the group consisting of t-butyl and hydrogen; wherein when R_4 is t-butyl, R_2, R_3 and R_6 are each hydrogen; wherein each of the dashed lines represents a carbon-carbon single bond or a carbon-carbon double bond with at least one of the dashed lines being a carbon-carbon single bond.

4,240,448
APPARATUS FOR INCREASING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS' PRODUCTS

Uwe Heitmann, Schwarzenbek, Fed. Rep. of Germany, and Joachim Buchegger, Richmond, Va., assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 766,927, Feb. 9, 1977, Pat. No. 4,121,595. This application Aug. 21, 1978, Ser. No. 935,598
The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.
Int. Cl.³ A24B 7/14
U.S. Cl. 131—21 R 4 Claims



1. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds a rod-like filler, a combination comprising a source of a web of coherent wrappers; means for draping said wrappers around the respective fillers; drive means for moving a succession of wrappers from said source along a predetermined path, including means for continuously advancing said web from said source to said draping means; at least one laser operable to emit at least one beam of coherent radiation; means for directing said beam against successive wrappers in said path whereby the wrappers are perforated at the points of impingement of said beams, said beam directing means being adjacent the path of said web intermediate said source and said draping means; and means for operating said laser in synchronism with said drive means to cause said beam to perforate selected portions of successive wrappers.

4,240,449
CIGARETTE AND CIGAR EXTINGUISHER

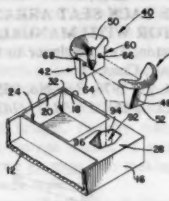
John C. Caravello, P.O. Box 141, Norwich, N.Y. 13815

Filed Aug. 21, 1979, Ser. No. 68,386
Int. Cl.³ A24F 13/18
U.S. Cl. 131—235 ST 10 Claims

1. An extinguisher for cigars and/or cigarettes comprising:
a base having a polygonal receptacle defined therein;
a snuffer for receiving cigars or cigarettes releasably mounted in said polygonal receptacle, said snuffer includ-

ing a pair of sections separably connected together, each section having a body portion in the shape of an elongated semi-polygon, a semi-circular apron portion on one end of said body portion and a portion of a stepped blind-ended bore defined in said body portion to have one end thereof contacting said apron portion and extending away from said apron portion;

said snuffer portions each having locking means and a lock receiving means thereon, said snuffer body forming a



polygonal shape corresponding to the polygonal shape of said receptacle, said apron portions forming a circular apron, and said bore portions forming a stepped, blind-ended bore when said snuffer portions are mated together;

said snuffer being accommodated in said receptacle with edges of said polygonal shapes corresponding so that said snuffer is held in said receptacle in a manner which inhibits its twisting and lateral movement of said snuffer about a longitudinal axis thereof.

4,240,450

COMPOSITION AND PROCESS FOR THE TREATMENT OF KERATIN MATERIALS WITH POLYMERS

Jean-Francois Grollier; Claire Fiquet; Chantal Fourcadier, all of Paris; Claude Dubief, Versailles, and Daniele Cauwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,554

Claims priority, application Luxembourg, Mar. 15, 1977, 76955

Int. Cl.³ A45D *7/00*; A61K *7/08, 7/11, 7/13*

U.S. Cl. 132—7 **29 Claims**

24. Process for the treatment of keratin material comprising the steps of applying to hair a composition comprising at least one anionic polymer containing at least one of a sulfonic acid, carboxylic acid and phosphoric acid unit, said anionic polymer having a molecular weight of from about 500 to 5 million, and at least one cationic polymer in a solvent medium, said anionic and cationic polymers each being present in an amount of from about 0.01 to about 10% relative to the total weight of the composition, said composition being applied at a pH at which the combination of anionic polymer and cationic polymer does not precipitate, and subsequently, without intermediate rinsing, modifying the pH on the hair to cause the combination of anionic polymer and cationic polymer to precipitate onto said material and subsequently rinsing said material thereby to produce a conditioning effect on the hair.

4,240,451

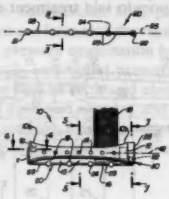
DIFFERENTIAL HAIR ENGAGEMENT RETAINER

Russell L. Thompson, Laguna Niguel, Calif., assignor to Helen of Troy Corporation, El Paso, Tex.

Filed Feb. 26, 1979, Ser. No. 14,808

Int. Cl.³ A45D *2/14*

U.S. Cl. 132—42 A **2 Claims**

1. A differential hair engaging retainer to be used in combination with a hair roller, and comprised of a stretchable elastomeric band extending lengthwise of the hair roller for retaining hair about said roller, the band including multiple alternating beads and rods located along the band length and forming multiple spaces between the band and said roller and between the beads, with or without hair extending therethrough, to permit lotions to pass therethrough in all positions of proximity of said stretchable band to said roller, the beads having substantially larger cross-sectional areas than the rods presented toward the roller to seat on hair wrapped about the roller.

4,240,452

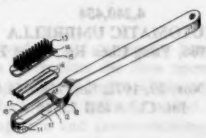
ELASTIC BASE TOOTHBRUSH

San-Bau Jean, No. 25, Lane 31, Min-Yo St., Lou Tong, Taiwan

Filed Sep. 13, 1979, Ser. No. 75,190

Int. Cl.³ A45D *44/18*

U.S. Cl. 132—84 R **1 Claim**



1. An elastic base toothbrush comprises a handle with a base body having a loop groove therein, several rubber tubes, a plastic plate with rows of holes, bunches of brushes and brush bearings; wherein three holes are formed at the front end of said groove and two holes at the rear end for flowing the remaining water out; said rubber tubes are fixed within the base portion surrounded by said loop groove for providing an elastic base, said plastic plate on said rubber tubes is held by the flange above said groove, bunches of brush carried in said plate are held through said rows of holes by means of the expanded lower part of said bearings to prevent said brush escaping from the base body; the number of said rows of holes is equal to that of said rubber tubes; which is characterized in that the brush is adequately moved upward or downward according to the outline of the teeth shape by means of the elastic rubber tubes and brush bearings.

4,240,453

APPARATUS FOR THE TREATMENT OF SURFACES INVOLVING THE USE OF AT LEAST A SOLVENT

Jean Vial, Eaubonne, and Gerard Sauvan, Franconville, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,026

Claims priority, application France, Feb. 28, 1978, 78 05701

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—107 **7 Claims**

1. An apparatus for cleaning, by the action of at least one solvent, at least one surface of an article contained therein, comprising:

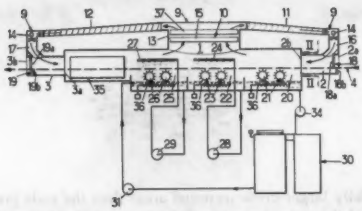
a. a treatment enclosure including at least one inlet lock-chamber and at least one outlet lock-chamber with an article transport means extending therebetween;

b. at least one solvent dispensing means an outlet end of which being disposed in said treatment enclosure and adjacent article transport means;

c. extraction means communicating with said treatment enclosure for extracting air-solvent vapors therefrom;

d. condensation means cooperating with said extraction means and positioned between said inlet lock-chamber and

said outlet lock-chamber and disposed so that air-solvent vapors extracted from said treatment enclosure pass therethrough for condensing the solvent vapors and recycling the solvent vapors to said treatment enclosure; and



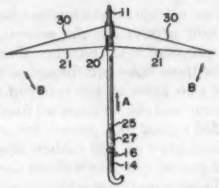
e. recycling duct means communicating with said treatment enclosure and said extraction means for recycling air that has had the solvent vapors substantially removed therefrom towards the inlet of said inlet lock-chamber and the outlet of said outlet lock-chamber.

4,240,454

AUTOMATIC UMBRELLA

Kuo L. Tsai, No. 106, Yung Chen Rd., Yung Ho Chen, Taipei Hsien, Taiwan

Filed Nov. 29, 1978, Ser. No. 964,476
Int. Cl.[2] A45B *25/16*
U.S. Cl. 135—24 **5 Claims**



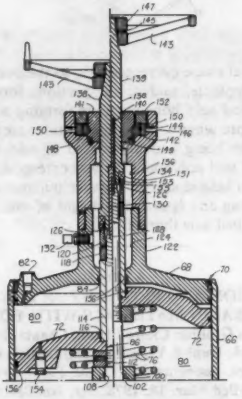
1. An improved automatic umbrella comprising:
- a tapered contracting cylinder at the uppermost portion thereof, its lower portion being an expansion which has an outward divergent inside surface;
- a fixing member fastened around said tapered contracting cylinder;
- an umbrella cloth fastened between said tapered contracting cylinder and said fixing member;
- a controlling tube, the top portion thereof being a spoke hub, the lower portion thereof being an expansion, inside of which there is provided an inner tube with several holes longitudinally arranged in line;
- a main stem provided within said contracting cylinder and controlling tube;
- a controlling lever within the lower portion of said main stem, having a top projecting piece, an interim projecting piece and a push button; and
- a set of spokes radially pivoted upon said spoke hub;
- a spring provided behind said controlling lever inside said main stem;
- being characterized in that on the one hand, in a case where said improved automatic umbrella in collapsed position is to be propped open, press said push button and then said coil spring compressed will furnish a downward pressure upon said spoke hub to unfold said umbrella cloth and said interim projecting piece will project into one of said holes of said inner tube; on the other hand, while said improved automatic umbrella in open position is to be folded up, longitudinally push forward said expansion of said controlling tube and then the outward divergent inside surface of said expansion of said tapered contracting cylinder will proceed the collection of said spokes therein and, until said top projecting piece projects rightly under the bottom of said expansion of said controlling tube, said improved automatic umbrella will stay in a collapsed position.

4,240,455

HEAT RESPONSIVE BACK SEAT ARRANGEMENT FOR VALVE OPERATOR WITH MANUAL OVERRIDE

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 27, 1978, Ser. No. 955,230
Int. Cl.[3] F16K *17/38, 31/143*
U.S. Cl. 137—77 **21 Claims**



1. A heat responsive back seat arrangement for a valve operator having an override, comprising:
- valve housing means including valve bonnet means having a bore;
- a reciprocate-in-one-sense-to-close, reciprocate-in-opposite-sense-to-open valve body having a rising valve stem connected therewith;
- the valve body being enclosed within the valve housing means, with the valve stem passing out through said valve bonnet means bore;
- an annular body of axially compressively loaded valve stem packing installed to form a seal between the valve bonnet means and the valve stem, yet permit axial reciprocating movement of the valve stem relative to the valve housing means;
- complementary, circumferentially extending back seat, annular sealing surface bearing shoulder means on each of said valve stem and said valve bonnet means in said bore of the latter, the two respective annular sealing surfaces being disposed on their respective parts to form an extensive, surface-to-surface circumferential seal between the valve bonnet means and the valve stem only when said valve stem is reciprocated to one resultingly-defined extreme of axial movement relative to said valve housing means;
- a valve operator located relatively exteriorly of said valve housing compared to said valve body by being separable therefrom by said back seat;
- said valve operator including normally-cocked force-storage means effectively interposed between said valve stem and said valve housing means, to when released, axially move said valve stem to said one extreme thus making said circumferential seal of said back seat, the valve operator

including means for selectively resiliently axially loading and releasing said force-storage means;

lock-out means normally effectively interposed between said valve stem and said valve housing means, normally locking said valve stem in a resultingly-defined axially opposite extreme thereof, in which said annular sealing surfaces are axially spaced from one another and are not in circumferential sealing engagement, and in which said force-storage means is resultingly normally cocked;

the lock-out means including a thermally fusible element effectively interposed between said valve stem and said valve housing means which, in the absence of subjection to a preselected abnormally high temperature level remains an effective mechanical bridge therebetween, but which, when subjected to said preselected abnormally high temperature level softens and becomes ineffective as a mechanical bridge, thereby releasing said normally-cocked force-storage means, to axially move said valve stem to said one extreme thus making said circumferential seal of said back seat;

the lock-out means further including an override means, comprising:

joint means dividing said valve stem into two coaxially aligned, telescopically related portions, being a main stem portion and a lock-out stem portion which are normally fully telescoped into abutting relation, the valve body being mounted to said main step portion; and

means for reversibly axially partially withdrawing the lock-out stem portion relative to the main stem portion, so as to enable the main stem portion to move axially from said opposite extreme toward said one extreme and back to said opposite extreme, by use of said means for selectively resiliently axially loading and releasing said force-storage means, while said lock-out stem portion is axially partially withdrawn relative to said main stem portion even while said thermally fusible element remains interposed as a mechanical bridge between said valve stem and said valve housing;

said lock-out means further including:

a band of screw threading on said lock-out stem portion;

a drive bushing threadably mounted on said band;

a radially outwardly opening notch in said drive bushing;

a locking dog means normally forced part-way into said notch;

force-storage means associated with said locking dog means, and tending to withdraw said locking dog means from said notch;

and said thermally fusible element being constituted by a block of heat-fusible material normally effectively interposed between said locking dog means and said valve housing means, so that when said block softens due to being heated and tends to lose interposition effectiveness, said force-storage means associated with said locking dog means releases force stored therein and said locking dog means withdraws from said notch, freeing said valve stem to axially move toward said axially opposite extreme.

4,240,456

MODULAR ELEMENT FOR A HYDRAULIC FLOW DIVIDER UNIT

Jean F. Louviot, Saint Denis, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 8, 1979, Ser. No. 1,752

Claims priority, application France, Jan. 16, 1978, 78 01047

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—100 **5 Claims**

1. A stack of stackable modular elements for a hydraulic flow divider, each said element comprising:

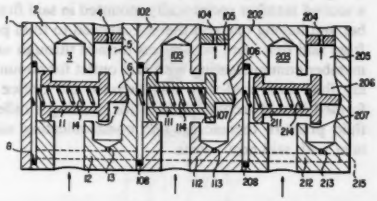
a transverse bore in said element;

a stacking face in said element at one end of said transverse bore, said stacking face including a milled out depression and contacting an opposing end of an adjacent element in said stack;

an exit hole in said element at the other end of said transverse bore;

an entry hole in said element at a midportion of said bore;

an outlet pressure equalization hole passing transversely through said element from said depression of said stacking face, said outlet pressure equalization hole communicating with said exit hole, said outlet pressure equalization hole extending to the face of each said element opposing said stacking face of each said element and thereby communicating with the stacking face and outlet pressure equalization hole of the adjacent element at said opposing end in said stack; and



a piston received in said transverse bore and adapted to move so as to regulate the flow opening between said entry hole and said exit hole, said piston having an internal cylinder which opens into said milled out depression of said stacking face and communicating with said outlet pressure equalization hole via said milled out portion of said stacking face, said cylinder traverses said entry hole and projects into said exit hole, said piston having a face in said exit hole exposed to the pressure in said exit hole;

wherein said piston is movable as a function of the variations in the pressure between said exit hole pressure and the pressure in said milled out portion.

4,240,457

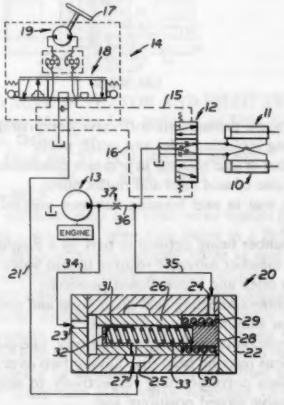
VARIABLE FLOW CONTROL VALVE FOR STEERING SYSTEMS OF ARTICULATED VEHICLES

Craig W. Riediger, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 15, 1978, Ser. No. 886,970

Int. Cl.³ G05D *11/02*

U.S. Cl. 137—101 **8 Claims**



1. A fluid circuit comprising:

a pump,

a variable flow control valve having a housing defining first and second inlets and an outlet therein, said pump connected to said first and second inlets,

orifice means connected between said pump and said second inlet for creating a differential pressure as between said first and second inlets, and

means in said variable flow control valve for communicating a variable fluid flow from said first inlet through said outlet in response to said differential pressure including a first member reciprocally mounted in said housing and having opposite ends thereof exposed to fluid pressure from said first and second inlets, respectively, said second inlet and the end of the first member exposed thereto being open solely to fluid pressure from said orifice means, a second member reciprocally mounted in said first member and having one end thereof exposed to fluid pressure from said first inlet, port means formed through said first member communicating with said outlet for communicating fluid from said first inlet thereto, and orifice means formed in said second member for creating a differential fluid pressure thereacross and communicating said first inlet with said port means.

4,240,458

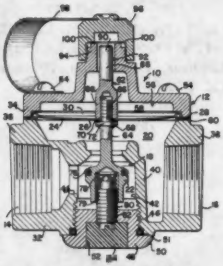
EXCESS PRESSURE SHUTOFF VALVE

Norman M. Huff, Chicago, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Continuation of Ser. No. 791,179, Apr. 27, 1977, abandoned. This application Apr. 26, 1978, Ser. No. 900,237

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **20 Claims**



1. An excess pressure shutoff valve comprising:

a housing including inlet and outlet ports:

a chamber in said housing in pressure communication with at least one of said inlet and outlet ports;

a valve seat in said housing between said inlet and outlet ports;

said chamber being defined in part by a diaphragm;

a valve member movable relative to said valve seat between valve open and valve closed positions;

a stem interconnecting said diaphragm and said valve member for simultaneous movement;

said diaphragm consisting of a unitary, one-piece, fluid impervious bistable snap disc having two over-center stable positions corresponding respectively to said valve open and valve closed positions; and

a spring urging said valve member toward the valve closed position.

4,240,459

VALVE ASSEMBLY

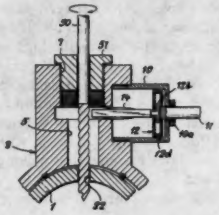
Hansjörg Trautwein, Am Stadtgarten 1, 4650 Gelsenkirchen, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,065

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741280

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **8 Claims**



1. A valve assembly for connection to a pipe, comprising:

a housing formed with a main passage opening toward said pipe and adapted to receive a drill for penetrating a wall of said pipe;

a seal interposed between said housing and said wall around said main passage;

means for clamping said housing onto said wall around said main passage;

means for clamping said housing onto said pipe, said housing being formed with a lateral slot communicating with said main passage and with a recess open toward but opposite said slot;

an auxiliary blocking plate receivable in said slot and having a free end adapted to enter said recess upon displacement of said plate across said main passage, said housing being provided with an auxiliary passage communicating with said main passage through said slot and forming a connecting fitting;

a sleeve removably connected to said fitting;

an actuator displaceable in said sleeve toward and away from the axis of said main passage;

connecting means between said actuator and said plate for enabling displacement of said plate relative to said actuator along said axis and limited displacement transversely thereto; and

a valve unit threaded onto said housing and having a spindle extending along said main passage and a valve member engageable with said plate and formed on said spindle, said recess and said slot having coplanar faces defining respective seats turned toward and away from said pipe, respectively, said plate being provided with a projecting formation on at least one side of said plate having inclined flanks receivable in and engageable with said seat turned toward said pipe for retaining said plate against lateral displacement by fluid pressure and self-centering said plate in said seat turned toward said pipe, when said spindle is withdrawn from contact with said plate, said plate being engageable by its opposite side with the seat turned away from said pipe, said plate being engaged by said spindle and being pressed thereby against said latter seat.

4,240,460

MEANS FOR LIMITING FLOATING MOVEMENT OF GATE VALVE SEATS

Ruben G. Alaniz, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,876

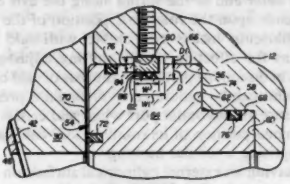
Int. Cl.³ F16K *43/00*

U.S. Cl. 137—327 **8 Claims**

1. In a gate valve having a valve body with a valve chamber

therein and inlet and outlet flow passages communicating with the valve chamber, an expanding gate valve assembly mounted within the valve chamber for movement between open and closed positions, said gate valve assembly including a gate and a segment with the gate and segment expanding laterally away from each other at the fully closed position, and an annular seat pocket about each of the flow passages:

the improvement comprising an annular seat mounted in each seat pocket for limited floating movement, the outer



circumference of said seat and the adjacent annular wall of said seat pocket having opposed annular grooves therein, and a pair of substantially semi-circular retainer ring segments mounted in said grooves and being of a thickness greater than the depth of one of the grooves to retain the annular seat within the seat pocket, the width of the ring segments being less than the width of said grooves to permit a limited floating movement of the seat within the seat pocket.

4,240,461

PIPE-FOLLOWING IRRIGATION MACHINE

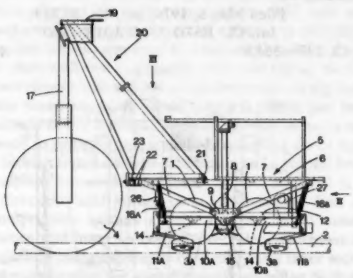
Vernon B. W. Harvey, Wimborne, England, assignor to Wright Rain Limited, Hampshire, England

Filed Jan. 9, 1979, Ser. No. 2,227

Claims priority, application United Kingdom, Mar. 14, 1978, 9984/78

Int. Cl.³ B05B *3/18*

U.S. Cl. 137—899.1 **8 Claims**



1. An irrigation machine comprising a vehicle to be guided to follow the course of a water supply pipe having a plurality of self-closing hydrants spaced apart along the length of the water supply pipe in an upper longitudinal surface thereof; a vertically-movable riser pipe carried on said vehicle and leading to an irrigation discharge device; a coupling at the lower end of said riser pipe to be coupled to each of at least some of the hydrants in succession and when so coupled to a hydrant to open a self-closing valve in the hydrant to permit water to flow through the riser pipe to the irrigation device; said vehicle comprising a main frame on which said riser pipe is mounted; guide means on said main frame engaging both sides of said water supply pipe; a sub-frame pivotally attached to said main frame to pivot about a substantially horizontal axis relatively to said main frame and traction means carried on said sub-frame and engaging the upper longitudinal surface of said water supply pipe.

4,240,462

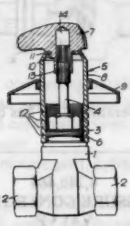
RECESSED VALVE

Norbert Bankstahl, Wolfschlugen, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,003

Int. Cl.³ F16K *27/00*

U.S. Cl. 137—377 **3 Claims**



1. A recessed valve comprising:

a valve casing having apertures for connection to supply lines;

valve means;

an actuating spindle coupled at one end to said valve means and having adjacent its other end a serrated surface portion, said serrated surface portion including a first plurality of circumferential notches each of said first plurality of notches providing a weakened portion such that said spindle may be shortened;

a protective sleeve surrounding said spindle, said protective sleeve having a radially inward projecting flange at one end, and a portion adjacent the other end having a second plurality of circumferential notches, each of said second plurality of notches providing a weakened portion such that said sleeve may be shortened; and

an actuating handle having a bore adapted to receive said other end of said spindle, said handle being rotatably mounted on said flange and including means adapted to engage said flange for limiting axial movement.

4,240,463

SAFETY VALVE ACTUATOR AND PILOT SYSTEM

Allen D. Moore, Marrero, La., assignor to Otis Engineering Corporation, Dallas, Tex.

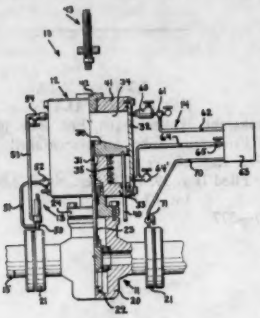
Filed Jul. 27, 1979, Ser. No. 61,497

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—492.5 **14 Claims**

1. A safety valve actuator and pilot valve system for closing and reopening a normally open gate valve in a flow line responsive to a predetermined pressure value in said flow line comprising: a hydraulic valve actuator coupled with said safety valve for closing said safety valve responsive to a fluid pressure increase communicated to said actuator from said flow line; pressure responsive pilot valve means connected with said flow line; a conduit from said pilot valve means to said valve actuator for conducting operating fluid pressure to said actuator when said pilot valve functions to close said safety valve; a conduit from said flow line to said valve actuator for conducting pressure fluid from said flow line to reopen

said safety valve; and a conduit from said valve actuator to said flow line to return operating fluid from said actuator to said



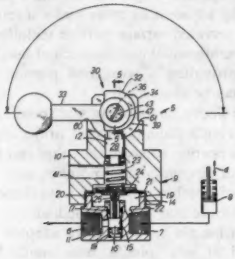
flow line after said operating fluid has been used to close said safety valve.

4,240,464

COMBINED PRESSURE CONTROL AND SHUT-OFF VALVE

Richard R. Schink, Racine, Wis., assignor to Milwaukee Cylinder Corporation, Cudahy, Wis.

Filed Oct. 24, 1979, Ser. No. 87,661
Int. Cl.[3] F16K *31/524*
U.S. Cl. 137—505.42 **2 Claims**



1. A pressure gas control unit of the type comprising a body in which there is an inlet port connectable with a pressure gas source, an outlet port connectable with a device operable by pressure gas and a pressure chamber at all times communicated with said outlet port, said control unit further comprising a valve element in said body movable axially in opening and closing directions for variably restricting flow of pressure gas from said inlet port to said pressure chamber, a coaxially displaceable pressure responsive control element for said valve element having opposite surfaces, one of which is exposed in said pressure chamber, and a helical expansion spring having an inner end bearing against the opposite surface of said control element and axially confined in a bore in the body that opens outwardly to one side thereof, said control element having a connection with said valve element whereby the latter tends to be moved in its closing direction in response to increasing pressure in said pressure chamber and in its opening direction in response to biasing force exerted upon the control element by said spring, said control unit being characterized by

adjusting means for readily and quickly adjusting the value of gas pressure which said unit maintains at its outlet port to any selected one of a stepless range of values, said adjusting means comprising:

A. a cam rotatable about a cam axis;

B. supporting means mounting said cam on the body at said one side thereof, for rotation about said cam axis, said supporting means comprising

(1) a boss on the body, alongside the bore and projecting from said one side of the body, and

(2) a screw secured to said boss and projecting therefrom across said bore;

C. said cam having a cam surface which is radially spaced from said cam axis and which extends across said bore and receives the reaction of the outer end of said spring, said cam surface being so arranged that the position of said outer end of the spring along the axis of said bore depends upon the rotational position of the cam;

D. calibrating means cooperable with said supporting means for effecting bodily shifting adjustment of the cam in directions parallel to the axis of said bore, so that the unit can be calibrated to maintain a predetermined pressure at said outlet port when said cam is in a predetermined position of its rotation, said calibrating means comprising a tubular bushing

(1) having an external cylindrical surface on which said cam is journaled for rotation, and

(2) having a bushing bore which is eccentric to said cylindrical surface so that adjustment of the cam axis parallel to the axis of said bore in the body is effected by rotation of said bushing about said screw and the screw cooperates with the boss to axially clampingly retain the bushing in any position of rotation in which it may be established; and

E. means for inhibiting movement of the cam out of any rotational position in which it may be established, the last mentioned means comprising

(1) annular friction means surrounding said bushing and axially adjacent to at least one side of said cam, and

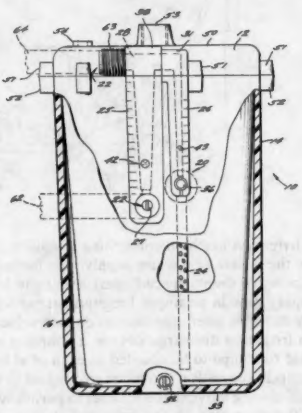
(2) an annular spring surrounding said bushing and cooperating with said screw and said boss to normally maintain said annular friction means engaged with said cam under axial clamping force.

4,240,465

MEDICATOR CONSTRUCTION

Helmut Rader, McLean, Va., assignor to Interfarm Corporation, McLean, Va.

Filed May 8, 1979, Ser. No. 37,217
Int. Cl.[3] B67D *5/42*; A01K *7/00*
U.S. Cl. 137—564.5 **10 Claims**



1. Apparatus for metering a medicant into a water flow line and including: a flexible bladder; a housing top portion; a housing bottom portion; means for receiving said bladder so that it is disposed between said housing top and bottom por-

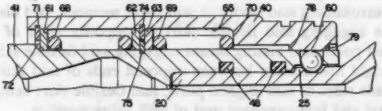
tions; a water flow conduit having a first branch thereof extending into the area between said bladder and said housing bottom portion to apply pressure to squeeze said bladder, and including means extending said first branch to a second branch in said housing top portion; a medicator flow conduit including an adjustable means for metering medicant from between said bladder and said water flow conduit second branch; and a flexible tube extending from said bladder interior to said medicant metering means; wherein the improvement comprises:

said housing top and bottom portions are formed of injection molded plastic; means defining said water flow conduit first branch and means extending said first branch are formed integrally with said housing bottom portion; and means defining said medicant flow conduit from said flexible tube to said second branch being formed integrally within said housing bottom portion; means defining said second branch being formed integrally within said housing top portion.

4,240,466
PUSH-PULL COUPLING

Eugene H. Herzan, Minnetonka, and Stanlee W. Meisinger, Plymouth, both of Minn., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 15, 1979, Ser. No. 3,172
Int. Cl.³ F16L *37/28, 37/22*
U.S. Cl. 137—614.04 **4 Claims**



1. A fluid coupling comprising a female member and a male member insertable into the female member to effect interconnection therewith, said male member having a detent receiving recess for effecting a locking connection between said members, said female member comprising an outer sleeve member having means thereon for fixing it against axial movement, an inner section adapted for sealing engagement with said male member and axially movable therewith relative to said sleeve member, detent means supported by said inner section for axial movement therewith and engageable with said sleeve member for radial movement into and out of the detent receiving recess of said male member, spring means acting between said inner section and said sleeve member for resisting relative movement therebetween to provide one level of uncoupling force when said inner section is moved in one direction and a second lower level of coupling force when said inner section is moved in the opposite direction, said spring means comprising first and second compression springs axially disposed in an annular space between said inner section and said sleeve member and further including abutment means carried by said inner section and said sleeve member for compressively engaging both said first and second springs when said inner section is moved in one direction and for compressively engaging only said first spring when moved in the opposite direction said abutment means comprising first, second and third axially spaced abutments fixed on said sleeve member and first and second axially spaced abutments fixed on said inner section, each of said abutments being disposed at an end of said first and second springs, said second abutments being disposed between said first and second springs, said first spring being biased between said first inner section abutment and said second sleeve member abutment in said one direction and said second spring being biased between said second inner section abutment and said third sleeve member abutment in said one direction, said first spring being biased between said second inner section abutment and said first sleeve member abutment in said opposite direction.

4,240,467
VALVE ASSEMBLY

Leland F. Blatt, and L. Douglas Blatt, both of 31915 Groesbeck Highway, Fraser, Mich. 48026

Filed Jan. 15, 1979, Ser. No. 3,410
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—625.66 **11 Claims**

6. A valve assembly comprising an elongated body having an axial bore defining an annular valve seat;

axially apertured end caps sealed over and secured to opposite ends of said body;

said body having a pressure port, cylinder ports and exhaust ports;

a valve spool loosely and reciprocally nested within said bore and at its ends sealed and movably supported within said bore, for controlling flow of pressure fluid through the respective ports;

first operator means on one end cap engageable with said spool, moving said spool to one control position at one end of said bore;

second operator means on the other end cap for moving said spool, when energized, to a second control position at the other end of said bore;

said spool including an axial portion and a plurality of spaced radially projecting axially spaced valve seal supporting portions, there being a series of longitudinally spaced pairs of annular grooves in said valve seal supporting portions, each defining an axial seal support of predetermined length;

and an annular apertured valve seal of flexible material loosely nested in each groove, and loosely mounted upon said axial supports, respectively;

the base of each seal having an axial width less than the length of each axial seal support;

each seal having an annular rim portion of decreasing width towards its periphery and transversely rounded at its outer edge, and of a diameter greater than said bore for flexing sealing engagement with said valve seat relative to said ports to form a fluid-tight contact with said bore;

said rim portions of said seals being movable over said valve seat with a minimum of friction and said seal bases adapted for limited axial movement on said axial supports, reducing the resistance of said spool to reciprocal control movements thereof, said seal rim outer edges rolling on said body to facilitate break-away therefrom, air pressure applied to said pressure port operatively acting upon the adjacent seals expanding them against said valve seat, creating a bubble-tight seal on said bore;

the sealing and supporting of said spool including annular channels adjacent opposite ends of said spool;

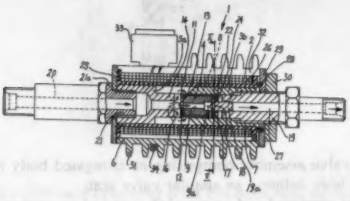
and a flexible O-ring seal nested in each channel and projecting radially outward of said spool, spacing said spool from said valve seat and serving as the sole support of said spool within said bore, said spool floating within said bore;

the rim of each valve seal being of low resiliency hard frictionless material of high Durometer creating a diaphragm action, the base of each seal being of increased resiliency and of a lower Durometer for ease of flexibility and expansion upon its axial support.

4,240,468
SOLENOID OPERATED VALVE

Peter Brand, and Adolf Helms, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,311
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714091; Dec. 23, 1977, 2757659
Int. Cl.³ F16K *31/06*
U.S. Cl. 137—625.33 **11 Claims**



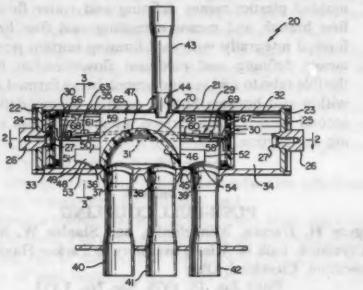
1. An electromagnetic shutoff valve for fluids, particularly for compressed gaseous fluids, comprising a tubular coil; a tubular ferromagnetic core surrounded by said coil; a fixed valve seat in said core, said seat having an end face and an annular opening provided in said end face for evacuation of fluid in open position of the valve; a ferromagnetic plunger reciprocably mounted in said core and having a first end face movable into and from sealing engagement with the end face of said seat and a second end face which is subjected to the pressure of inflowing fluid so that the fluid tends to maintain said first end face in engagement with the end face of said seat, said plunger further having a plurality of passages defining discrete paths for the flow of fluid from said second to said first end face, said passages including a first passage having a discharge end within said annular opening and a second passage having a discharge end located radially outwardly of said annular opening; and means for energizing said coil to thereby move said plunger away from said seat and permit the fluid to flow from said passages into said opening, the end face of said seat being engaged by the first end face of said plunger in deenergized condition of said coil whereby the first end face of said plunger seals said opening from said passages.

4,240,469
REVERSING VALVE CONSTRUCTION AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Werner R. Bauer, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 825,958, Aug. 19, 1977, Pat. No. 4,188,975. This application Nov. 6, 1978, Ser. No. 958,030
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ E03B *3/00*
U.S. Cl. 137—625.66 **15 Claims**

1. In a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of passage means of said valve member relative to said port means, the improvement comprising a flexible sealing skirt carried by said valve member and extending outwardly therefrom adjacent said valve seat means so as adapted to be exposed to fluid pressure in said chamber that will act directly thereon and cause said flexible skirt to flex and engage said valve seat means in a manner to tend to sealingly conform to the contour of said valve seat means and thereby seal said passage means to said valve seat means while permitting sliding movement therebetween, biasing means in said housing means and acting on said flexible skirt to urge the same toward said valve seat means, and a piston unit disposed in said housing means and being operatively interconnected with said valve member to move the same relative to said valve seat means, said biasing means being under compression between said piston unit and said flexible skirt, said valve member being adapted to float relative to said piston unit, said port means comprising first, second, and third ports disposed in aligned relation and said passage means comprising a cavity in said valve member that will bridge said first and second ports while exposing said chamber to said third port when said valve member is in one position

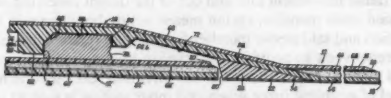


thereof and will bridge said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said flexible skirt being annular and surrounding said cavity of said valve member, said biasing means engaging said flexible skirt on opposite sides of said aligned ports, said biasing means engaging said flexible skirt in a straight line manner between opposed ends of said skirt on opposite sides of said aligned ports, said flexible skirt being an integral and homogeneous part of said valve member.

4,240,470
COMPOSITE PIPE HAVING AN INTEGRAL BELL END

Alex L. McPherson, Winfield, Ill.; Douglas E. Triestram, and James E. Lawrence, Jr., both of Coshocton, Ohio, assignors to Clow Corporation, Oak Brook, Ill.

Filed Feb. 21, 1978, Ser. No. 879,158
Int. Cl.³ F16L *11/02*
U.S. Cl. 138—109 **3 Claims**



1. A discrete length of composite reinforced pipe comprising a generally cylindrical tubular portion defining a spigot end and an opposite integral annular bell end adapted to receive the spigot end of a similarly configured pipe therein, said cylindrical tubular portion including an inner liner defined by a resin impregnated surfacing veil extending the full length of said cylindrical tubular portion, an annular butting area formed circumferentially of said inner liner adjacent said bell end so as to define an annular surface for abuttment with the spigot end of a mating pipe inserted into said bell end, an inner layer of resin reinforced continuous fiberglass roving formed coaxially on the outer surface of said inner liner and butting area and extending axially forwardly of said butting area to define said bell end of the pipe, said inner layer comprising a plurality of concentric layers of continuous fiberglass roving and defining an annular seal receiving groove internally of said bell end, a sand-resin core layer of substantially uniform radial thickness disposed circumferentially about said inner layer along only said cylindrical tubular portion of said pipe so as to terminate generally at said bell end and not form a part thereof, said sand-resin core having a sand to resin weight ratio in the range

of approximately 80:20 to 70:30, and an outer layer comprising a plurality of concentric layers of resin inpregnated continuous fiberglass roving disposed circumferentially about said core layer and the exposed surface of said inner layer defining said bell end so as to cooperate with said inner layer in defining said bell end.

4,240,471

LOOM BACK REST MECHANISM

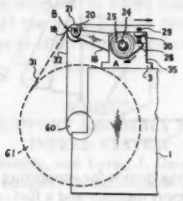
Otto Rotreki, Brno; Vladimir Vasicek, Moravsky Krumlov, and Jindrich Henzl, Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

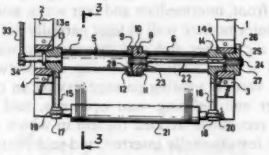
Filed Sep. 6, 1978, Ser. No. 940,105

Claims priority, application Czechoslovakia, Sep. 7, 1977, 5813-77

Int. Cl.³ D03D *49/22*

U.S. Cl. 139—114 **10 Claims**





1. A movable back rest mechanism for a loom having a fixed structure, a warp beam, and a back rest roller over which warp from the warp beam travels on its way into the loom, the back rest roller yieldably deflecting the warp as it travels from the warp beam into the loom, said mechanism comprising means for supporting and resiliently opposing deflection of the back rest roller by the warp, said last-named means comprising a torque rod extending transversely of the path of the warp fed from the warp beam into the loom, levers extending transversely of the torque rod from hubs on the levers coaxial of the torque rod, bearing means on the outer end of the levers rotatably mounting the back rest roller, means securing a first end of the torque rod against turning of such first end of the torque rod by the force imposed on the back rest roller by the warp, and means securing the second end of the torque rod to the hubs of the levers so as to turn therewith.

4,240,472

APPARATUS FOR CLEANING AND COATING CAPILLARY TUBES USEFUL IN GAS CHROMATOGRAPHY

Srivas R. Srinivas, 2850 Webb Ave., Apt. 5J, Bronx, N.Y. 10468

Division of Ser. No. 681,604, Apr. 29, 1976, Pat. No. 4,086,051, which is a continuation of Ser. No. 495,500, Aug. 7, 1974, abandoned, which is a division of Ser. No. 232,583, Mar. 7, 1972, Pat. No. 3,831,555. This application Apr. 21, 1978, Ser. No. 898,776

Int. Cl.³ B63B *31/02*

U.S. Cl. 141—59 **2 Claims**

1. A device useful for cleaning and coating capillary tubes which comprises: an elongated vessel having walls capable of withstanding elevated pressures up to about 2000 psi, an elongated conduit having an inside open passageway removably inserted into one end of said elongated vessel so as to form a pressure-tight connection therewith, an elongated tube adapted with connection means at one end thereof removably fastened to the upper end of said elongated conduit so as to form a pressure tight connection therewith, said tube depending through the open passageway inside of said conduit and extending into said elongated vessel, means for connecting the top portion of said tube to auxiliary fluid lines, said elongated

conduit being adapted with means situated on the side wall thereof for connection to a vacuum line, and means removably insertable into the alternate end of said elongated vessel for forming a pressure tight connection with a capillary tube or the like, wherein a capillary tube is removably inserted in said means removably insertable into the alternate end of said elongated vessel, and wherein a desired amount of cleaning fluid is drawn into said vessel from said elongated tube by connecting said vacuum line connecting means to a vacuum source, and then said vessel is pressurized to flow the cleaning fluid out of the vessel into said capillary tube.

4,240,473

INSERT FOR INJECTING A LIQUID PRODUCT INTO A BORE

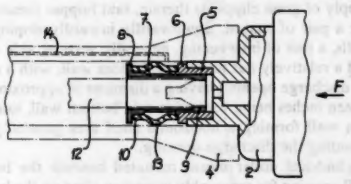
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Jan. 16, 1979, Ser. No. 3,975

Claims priority, application France, Feb. 10, 1978, 78 04802

Int. Cl.³ B65B *3/04*; F16L *21/02*

U.S. Cl. 141—91 **4 Claims**



1. A composite insert for injecting a liquid product contained in a container into a dental handpiece provided with an inner bore and an internal abutment-forming element in said bore, which comprises:

a first rigid socket formed with an external flange and adapted to fit fixedly into a collar-shaped element surrounding the outlet aperture of said container filled with said product,

a second rigid socket extending forwardly from said first

socket and having its rear end slidable telescopically in said first socket and provided with an annular bearing surface formed on its inner peripheral surface and adapted to engage said internal abutment-forming element of said handpiece, the front end of said second insert having an external flange, and

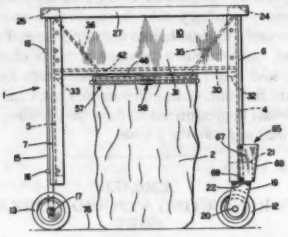
a flexible resilient sleeve surrounding the portion of said second socket externally of said first socket, opposite ends of said sleeve bearing against said external flanges of said first and second sockets, whereby the application of an axial force to said second socket bearing surface by said abutment-forming element will cause said second socket to penetrate more deeply into said first socket and the flexible resilient sleeve to undergo an elastic deformation in the form of a bead-like swollen portion thereof projecting radially outwards for engagement with the wall of the inner bore of said handpiece in order to provide a fluid-tight joint between the outlet aperture of the container and said bore.

4,240,474

BAG HOLDER AND COLLECTOR CONSTRUCTION

Harold W. Perkins, 781 Ray Ave. NW., New Philadelphia, Ohio 44663

Filed Jun. 25, 1979, Ser. No. 52,070
Int. Cl.³ B65B *1/06*
U.S. Cl. 141—231 **6 Claims**



1. An improved bag holder and collector construction including:

(a) a frame;

(b) wheels movably supporting the frame;

(c) hopper means mounted on the frame for receiving a supply of grass clippings therein, said hopper means having a pair of spaced, downwardly inwardly sloping end walls, a pair of intervening, generally vertical, side walls, and a relatively flat horizontal bottom wall, with a circular discharge opening having a diameter of approximately fifteen inches being formed in said bottom wall, said bottom wall forming a horizontal shelf area generally surrounding the discharge opening;

(d) cylindrical collar means mounted beneath the bottom wall opening for removably mounting a bag on the hopper means for receiving grass clippings discharged through said bottom wall opening;

(e) band means cooperatively engageable with the collar means for removably clamping a bag on said collar means; and

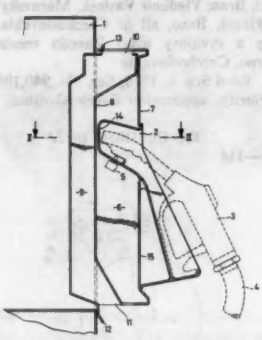
(f) said horizontal shelf area surrounding said circular discharge opening and the configuration of said sloping end walls and said vertical side walls serving to restrain grass clippings through said discharge opening during replacement of bags.

4,240,475

SAFETY MOUNTING DEVICE FOR THE NOZZLE OF A LIQUID-FUEL DISPENSING PUMP

Manfred Schulz, Einbeck, Fed. Rep. of Germany, assignor to Dresser Europe S.A., Einbeck, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,403
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807976
Int. Cl.³ B65B *3/00*; B05B *15/06*
U.S. Cl. 141—392 **7 Claims**



1. A safety mounting device for supporting a fuel-dispensing nozzle, having a support member and a fuel outlet opening, on the casing of a liquid fuel-dispensing pump, comprising:

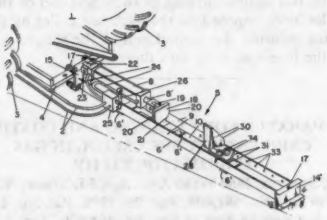
a nozzle mount housing mountable on the pump casing having generally upstanding, spaced-apart, successively-disposed front, intermediate and rear walls, said front wall and said intermediate wall at least partially defining therebetween a chamber and said intermediate wall and said rear wall at least partially defining therebetween a substantially vertical venting passage having an open, upper and lower end defining vent openings, said front wall having a receptacle defined therein in which said nozzle may be at least partially inserted, and said venting passage acting as a chimney for inducing an upward draft through the passage to carry any explosive gas mixtures which leak from the nozzle into the atmosphere.

4,240,476

HYDRAULIC LOG SPLITTING ATTACHMENT FOR A TRACTOR

Clarence G. Rattray, Rte. 1, Box 48, Reardan, Wash. 99029

Filed Dec. 14, 1978, Ser. No. 969,392
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **4 Claims**



1. In a hydraulic log splitting attachment for a tractor equipped with a drawbar and a hydraulic pressure system comprising an elongated channel frame including spaced apart oppositely disposed generally V-shaped plates providing an elongated opening therebetween to accommodate said plates, embrace and retain a log to be split thereon and therebetween,

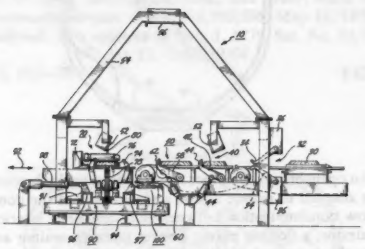
butt plate means having generally V-shaped side edge cutouts interfitting said plates and slidably arranged thereon, hydraulic cylinder means on said frame with the piston thereof swivably connectable to said butt plate means, said frame having end plates on opposing ends, one end plate being pivotally connectable to said drawbar, and said cylinder being connectable to said pressure system, a cutting and splitting wedge plate means including a base portion slidably adjustable on said channel frame and spaced from said butt plate means, said wedge plate having a cutting plate upstanding from and extending at right angles relative to said base portion, said cutting plate being flat and flared outwardly at its rearward portion and having a sharpened cutting edge forwardly thereof, and said base portion projecting rearwardly of said wedge and formed with generally V-shaped base channel members interfitting said channel frame plates and slidably adjusting said wedge thereon, control valve means on said channel frame connectable to said pressure system whereby when a log is positioned between said V-shaped plates said wedge and butt plate means, and said cylinder actuated to force said butt plate means against one end of the log the other end thereof is pushed against said wedge to effect splitting thereof.

4,240,477

MOVABLE SUPPORT ASSEMBLY FOR A BOARD INFEED SYSTEM

James N. Horn, Seattle, and Lorne J. Garden, Mercer Island, both of Wash., assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed May 29, 1979, Ser. No. 43,445
Int. Cl.³ B27B *1/00, 31/06*
U.S. Cl. 144—245 R **12 Claims**



1. A movable support assembly mounted on a base for movably supporting a board infeed system, which board infeed system feeds a board having a predetermined orientation with respect to a predetermined infeed line of direction along said predetermined infeed line of direction to woodworking apparatus, the support assembly adapted to laterally move the board infeed system along a line perpendicular to the predetermined infeed line of direction, the support assembly comprising:

a movable mounting frame to which is mounted the board infeed system;

bearing means positioned between the base and the movable mounting frame providing for lateral movement of the movable mounting frame with respect to the predetermined infeed line of direction;

means coupled between the movable mounting frame and the base for laterally positioning the movable mounting frame with respect to the predetermined infeed line of direction; and

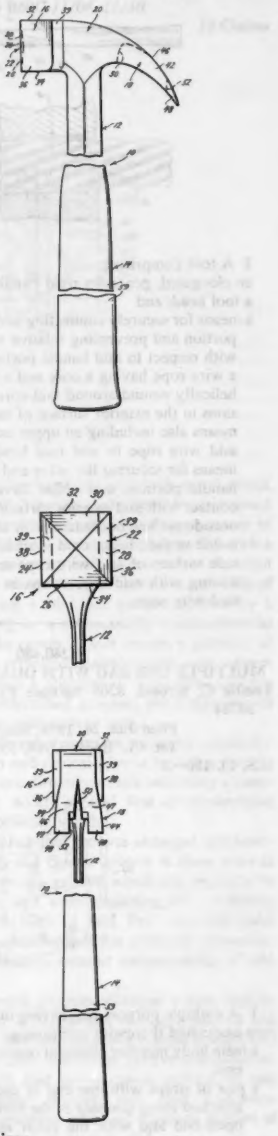
means coupled between the movable mounting frame and the base for maintaining a predetermined alignment of the movable mounting frame with respect to the predetermined infeed line of direction.

4,240,478

COMPACT HAMMER WITH RECESSED FACE AND NOTCHED CLAW

James F. Wilson, Rte. 1 Box 199, Dittmer, Mo. 63023

Filed Jan. 26, 1979, Ser. No. 6,852
Int. Cl.³ B25C *1/00*
U.S. Cl. 145—29 R **7 Claims**



1. A hammer comprising:

(a) a grippable handle,

(b) a head connected to the handle; and

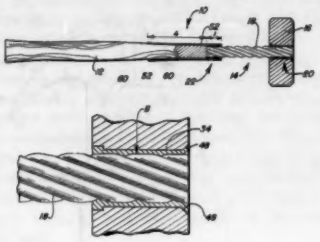
(c) the head having a front striking face recessed into the head, the recess having a plurality of inwardly inclined substantially flat surfaces.

4,240,479

TOOL HANDLE

Frank Schleffendorf, 2717 W. Agatite, Chicago, Ill. 60625

Filed Dec. 7, 1978, Ser. No. 967,227
Int. Cl.³ B25G *1/00*
U.S. Cl. 145—61 D **9 Claims**



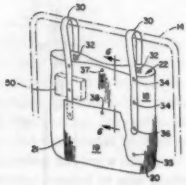
1. A tool comprising:
an elongated, generally rigid handle portion;
a tool head; and
a means for securely connecting said tool head to said handle portion and preventing relative rotation of said tool head with respect to said handle portion, said means including a wire rope having a core and a plurality of wire strands helically wound around said core defining helical depressions in the exterior surface of said rope, said connecting means also including an upper collar securing one end of said wire rope to said tool head and a lower fastening means for securing the other end of said wire rope to said handle portion, said collar having an inside surface in contact with said exterior surface of said wire rope and an outside surface in contact with said tool head, said collar inside surface being cold worked to conform to the outside surface of said wire rope and having helical ridges mating with said depressions in said exterior surface of said wire rope.

4,240,480

MULTIPLE USE BAG WITH DUAL PURPOSE STRAPS

Lucille C. Strobel, 8305 Sprague Pl., New Carrollton, Md. 20784

Filed Jun. 26, 1979, Ser. No. 52,260
Int. Cl.³ B65D *33/06, 33/14, 33/16*
U.S. Cl. 150—3 **12 Claims**



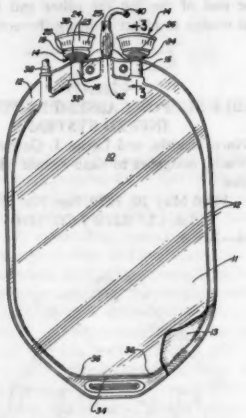
1. A multiple purpose bag having dual use suspension structure associated therewith comprising:
a main body member closed at one end and open at the other end;
a pair of straps with one end of each strap non-removably attached along one side of the body member adjacent said open end and with the other end of each strap being detachably connected by fastening means at said other end of each strap;
complementary fastening means associated with the opposite side from said one side of said main body member for detachably securing the fastening means of the detachable ends of the individual straps to the body member in at least two different positions to provide at least two strap configurations; and
further means consisting of a pocket with an opening in the same direction as the open end of the main body member provided on the body member so that when the detachable ends of said straps are secured to the body member in at least one position thereof by said complementary fastening means, the detachable ends of said straps are covered by said further means and thereby protected from inadvertent detachment from the body member.

4,240,481

SEAL FOR FLEXIBLE CONTAINER HAVING FLEXIBLE, GENERALLY CONICAL PORTIONS

Edward L. Bayham, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 5, 1979, Ser. No. 17,633
Int. Cl.³ B65D *17/00*
U.S. Cl. 150—8 **21 Claims**



1. An openable seal member for a container which comprises a tube adapted to extend across a sealed area of the container for flow communication between said container interior and the exterior; a flexible plastic pocket member sealing and enclosing the outer end of said tube; tear means for opening said pocket member for access to said tube, said tear means comprising a circumferential line of tearing weakness positioned about said pocket member in transverse relation to the longitudinal axis of said tube, the improvement comprising, in combination:
a flexible, generally conical portion positioned between the outer end of said tube and said tear means, diverging outwardly and constituting an inner portion of said pocket member, to define upon opening of said seal member, an enlarged, protective area surrounding the outer end of the bore of said tube.

4,240,482

BAG-LIKE LIQUID CONTAINERS, ESPECIALLY FOR MEDICAL TREATMENT

Karl G. B Andersson; Ulla I. Forsberg, and Knut I. Larka, all of Halmstad, Sweden, assignors to Duni Bila AB, Sweden

Filed Mar. 16, 1979, Ser. No. 21,065
Claims priority, application Sweden, Mar. 17, 1978, 7803093
Int. Cl.³ B65D *33/38*
U.S. Cl. 150—8 **3 Claims**

1. A bag-like liquid container especially intended for medical purposes welded from at least two layers of flexible flat plastic film joined at their edges to form a bag that is flat when empty,

the edges of said layers of plastic film being left unjoined at one point to define an aperture in the container, and at least one closable cylindrical spout extending through said aperture in said container and intended for filling or emptying the container, said spout having its center line substantially in the plane of the container when said container is in a flat condition, said spout provided with a bowl-shaped flange formed integral with said spout, the surface of said flange merging with the

outside of said spout engaging against and welded to the interior face of said layers of plastic film so as to provide a completely impervious attachment of the spout to the container as well as a separation of the sides of the container such that the liquid flowing into and out of the container is always guaranteed a free passage, the radial cross-sectional thickness of said bowl-shaped flange diminishing toward the outer periphery of said flange.

4,240,483

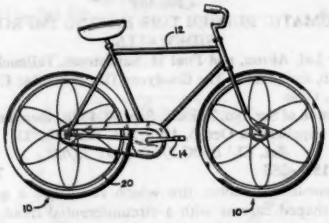
SPOKED WHEEL

Bran F. Gregoric, 4685 Central Blvd., Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 905,658, May 15, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,751

Int. Cl.³ B60B *9/04*

U.S. Cl. 152—75 **5 Claims**



1. A wheel comprising an annular wheel rim member of generally circular shape, a hub member positioned concentrically within said wheel rim member, and energy-transferring spoke means connecting said hub member with said wheel rim member, said spoke means comprising a continuous length of wire formed into a plurality of interconnected spoke members extending radially from said hub member to circumferentially spaced apart locations on said rim member, said length of wire being wound in a tight spiral coil about said hub member and being wound partially about said rim member between adjacent ones of said spoke members, said spoke members being of arcuate shape between said hub and rim members so that the spoke member can flex in response to engagement of the portion of the wheel adjacent thereto with a supporting surface on which said wheel is rolled to thereby tighten said spiral coil, and so that said spoke members can unflex to impart a torque on said wheel when the portion of the wheel adjacent thereto approaches a position breaking contact with said supporting surface.

4,240,484

PNEUMATIC TIRE FOR LARGE SIZE AND HIGH SPEED MOTOR CYCLES TWO-WHEELED VEHICLES

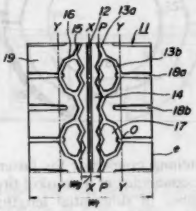
Hiroshi Kojima, Hino; Takao Sakamoto, Kodaira, and Tatsuro Shimada, Fussa, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,746

Claims priority, application Japan, Jun. 9, 1978, 53/68910

Int. Cl.³ B60C *11/04, 11/10*

U.S. Cl. 152—209 R **12 Claims**



1. In a pneumatic tire for large size and high speed motor cycles comprising a toroidal carcass, and a tread superimposed about a crown of said carcass and extending from a center of said crown to both sides thereof in substantially parallel with a sectional profile of said carcass to such an extent that the tread has a width larger than a maximum width between sidewalls of the tire; said tread having a rib-block pattern defined by a central groove extending in a substantially circumferential direction of the tire at the center of said crown, a plurality of circumferential grooves arranged symmetrically with respect to said central groove and a plurality of transverse grooves crossed with said circumferential grooves, the improvement characterized by defining said pattern with

a pair of first circumferential grooves arranged symmetrically with respect to said central groove in such a manner that a distance between directrixes each indicating a bisector of a maximum width of said first circumferential groove is 20–30% of tread width,

a pair of second circumferential grooves arranged symmetrically with respect to said central groove at those sides of said first circumferentials groove which are opposite to said central groove and each consisting of a common portion united with each of said first circumferential grooves and a non-common portion arranged circumferentially in a discontinuous manner independently of said common portion,

long and short transverse grooves arranged within regions located respectively between said common portion and the tread edge and between said non-common portion and the tread edge said short transverse groove communicating at one end with said non-common portion of said second circumferential groove, said long transverse grooves not communicating with said common portion of said second circumferential groove, and

the degree of zig-zag of said central groove, first and second circumferential grooves increasing from the center of the tire toward the edges whereby in the ground contact area of the blocks transverse rigidity increases as camber angle increases.

4,240,485

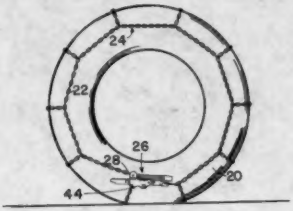
NONSKID TIRE CHAIN CONNECTOR MEANS

Forest H. Barnett, 2602 N. Baltimore, Tacoma, Wash. 98407, and Clarence E. Barnett, Redmond, Wash., assignors to Forest H. Barnett, Tacoma, Wash.

Continuation-in-part of Ser. No. 787,781, Apr. 15, 1977, Pat. No. 4,130,155. This application Oct. 30, 1978, Ser. No. 955,948

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—219 **6 Claims**



1. In a self-tightening connector for fastening together the two ends of a side connector of a nonskid tire chain assembly, a bar-shaped member of substantial length; a bar-receiving member having an opening therein for slidingly interfitting with said bar-shaped member, limiting transverse movement therebetween, and permitting relative longitudinal movement therebetween and between extended and retracted positions; ratchet means comprising engagable teeth and a pin, one thereof carried by the bar-shaped member and the other thereof carried by the bar-receiving member; spaced transverse bars carried, respectively, by said bar-receiving member and said bar-shaped member; detachable elastic means extending between and carried by said transverse bars, yieldingly urging said transverse bars toward each other and thereby said members toward retracted position and, when the side connector is attached to a tire chain and mounted on a tire, cooperating with the ratchet means in locking said two members against relative longitudinal movement toward their extended position, said ratchet means being releasable by relative angular movement of said two members.

4,240,486

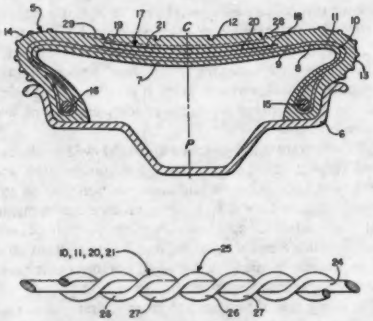
STRETCHABLE RADIAL SPARE TIRE

Georges J. E. Schmit, Bridel, and Thomas N. H. Welter, Keispelt, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 16, 1978, Ser. No. 916,272

Int. Cl.³ B60C *9/00*; **D02G** *3/02*

U.S. Cl. 152—330 R **9 Claims**



1. A stretchable tire, comprising:

(a) at least one carcass ply reinforced with radially oriented cords disposed at angles in the range of from 75–90 degrees relative to a centerplane containing the mid-circumferential centerline of the tread of the tire when the tire is molded, vulcanized and uninflated in a storage shape, said cords of said carcass ply being highly elongatable in an amount of from 50 to 100 percent to allow for toroidal expansion of the tire to an inflated operating shape;

(b) a fluid impervious innerliner disposed at the radially inner surface of said tire within said carcass ply;

(c) a tread and pair of sidewalls surrounding said carcass ply and terminating at a pair of annular beads;

(d) at least one belt ply of cords interposed between said carcass ply and tread for annularly reinforcing the tire, said cords of said belt ply being disposed at angles in the range of from 0–30 degrees measured from said centerplane when the tire is molded, vulcanized and uninflated in said storage shape, and also being highly elongatable in an amount of from 50 to 100 percent to allow for circumferential expansion of the tread upon inflation of the tire to said inflated operating shape;

(e) each of said reinforcement cords of said carcass ply and said belt ply consisting of a central core and at least one inextensible yarn spirally wrapped around said core, the tensile strength of said core being sufficient prior to being subjected to temperatures of vulcanization to maintain said inextensible yarn in helical relation during building of the tire and shaping to said storage shape from an unvulcanized cylindrical shape; and

(f) said core being of a material having a sufficient reduction in tensile strength when subjected to temperatures of vulcanization of the tire to permit the stretching out of said yarn after the tire is vulcanized and during expansion of the tire from said deflated storage shape with said yarn in the spirally wrapped condition to said inflated operating shape with said yarn in the stretched out condition.

4,240,487

PNEUMATIC RUBBER TIRE HAVING IMPROVED SIDEWALLS

Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 728,482, Sep. 30, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,923

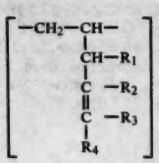
Int. Cl.³ B60C *5/04, 1/00, 13/00*

U.S. Cl. 152—355 **7 Claims**

1. A pneumatic rubber tire which comprises a generally toroidal shaped carcass with a circumferential tread, shaped beads and connecting sidewall portions extending between said tread and beads and having adhered to said sidewall portion an adherent, covulcanized outer rubbery sidewall layer extending from the general area of said bead portion towards said tread, having a 300 percent modulus at 25° C. in the range of about 500 to about 1200 pounds per square inch, where said rubbery sidewall layer is the elastomeric composition consisting essentially of, based on 100 parts by weight rubber (A) about 15 to about 60 parts by weight of rubbery polymer of at least one nonconjugated diolefin selected from the group consisting of diolefins having the formula:

$$CH_2=CH-\underset{R_1}{CH}-\underset{R_2}{C}=\underset{R_3}{C}-R_4$$

where R_1, R_2 and R_3 are hydrogen, a lower alkyl group containing up to 4 carbon atoms or an aryl group, and R_4 is a lower alkyl group containing up to 4 carbon atoms or an aryl group,



(B) about 85 to about 40 parts by weight of high unsaturation rubber selected from the group consisting of at least one of natural high cis-1,4-polyisoprene rubber, synthetic high cis-1,4-polyisoprene, high cis-1,4-polybutadiene, butadiene/styrene rubber and polyalkenylenes and (C) 0 to about 40 parts by weight of at least one low unsaturation rubber selected from an EPDM and halobutyl rubber, where said EPDM rubber is an ethylenepropylene-nonconjugated diene terpolymer containing from about 20 to 75 weight percent units derived from ethylene, from about 80 to 25 weight percent units derived from propylene, and a minor proportion of from about 1 to 15 weight percent units derived from a C_5-C_{30} nonconjugated diene and where said halobutyl rubber is a chlorinated or brominated butyl rubber prepared by copolymerization of isobutylene and isoprene to form a butyl-type rubbery copolymer containing about 95 to about 98 weight percent isobutylene and, correspondingly, about 5 to about 2 weight percent isoprene and then chlorinating or brominating said copolymer to form the halobutyl rubber containing about 0.5 to about 2.0 weight percent chlorine or bromine and about 0.5 to about 3.5 mole percent unsaturation expressed in units of carbon-to-carbon double bonds per kilogram of polymer.

4,240,488

TIRE BREAKER STRIP WITH FOLDED PLIES

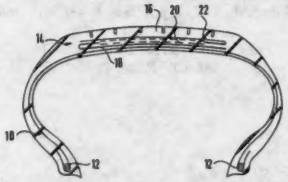
Brian L. Wilcox, Birmingham, England, assignor to Dunlop Limited, London, England

Filed Jan. 30, 1979, Ser. No. 7,687

Claims priority, application United Kingdom, Feb. 9, 1978, 5186/78; Jul. 27, 1978, 31416/78

Int. Cl.³ B60C *9/18*

U.S. Cl. 152—361 FP **9 Claims**



1. A vehicle tire of the radial carcass type and having a breaker structure comprising a first radially inwardly steel cord ply having a bias angle between 16° and 25° and having one edge thereof folded radially outwardly and axially inwardly of the tire to form a double thickness layer extending transversely of the breaker by an amount less than half the overall width of the breaker, a second steel cord ply disposed radially outwardly of said first steel cord ply and the folded edge thereof, said second steel cord ply having one edge thereof on the transversely opposite side of the breaker from the folded edge of said first steel cord ply, folded radially inwardly and axially inwardly of the tire to form a double-thickness layer extending transversely of the breaker by an amount less than half the overall width of the breaker, the axially inward edges of the folded edges being spaced apart transversely of the breaker, and at least one further cord layer located radially between the first and second steel cord plies and axially between said spaced-apart axially inward edges of the folded edges but without overlapping said folded edges, the cords of said at least one further cord layer having a bias angle of not more than 10° and being of a material which has a zero or negative temperature coefficient of expansion to provide a substantially uniform elastic modulus across the width of the breaker.

4,240,489

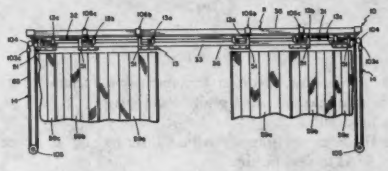
DRAPERY HANGER AND MANIPULATOR

Harold L. Madsen, 14615 S. Clark St., Dolton, Ill. 60419

Filed May 30, 1979, Ser. No. 44,342

Int. Cl.³ A47H *1/00*

U.S. Cl. 160—126 **11 Claims**



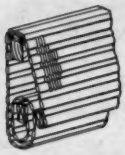
1. A drapery hanger and manipulator for supportably hanging and manipulating one or more drapery curtain panels having a leading and a trailing edge comprising a traverse track bridge to be positioned over an area to be covered by drapery, said bridge having a first track means therealong to slidably support a drapery hook hanger means, said bridge having a second track means therealong to slidably support a drapery carrier means, said bridge having cam means longitudinally spaced apart therealong, drapery hook hanger means slidably supported in said first bridge track for supporting drapery hooks slidably movable along said bridge to support the drapery panels from the leading to the trailing edge thereof, drapery carriers serially slidably supported in said second bridge track for independent movement along said bridge, said carriers having a hook extension connected to respective selected ones of said series of hook hangers to cause said selected hook hangers to respectively move with said carriers, a linear drive means having forward and reverse drive means for selectively providing forward and reverse linear drive along said bridge, said carriers having forward drive receiving means adapted to sequentially receive forward drive from said linear drive means for respectively moving said panels by urging the leading edge along said bridge in a direction away from the trailing edge thereof, said carriers having reverse drive receiving means disconnectably and respectively receiving said reverse drive means to normally respectively drive said carriers in a reverse direction along said bridge for respectively moving said panels by urging the leading edge along said bridge in a direction away from the trailing edge thereof, a cam follower on one or more of said carriers and responsive to said cam means as said carriers are moved in reverse along said bridge for disconnecting respective reverse drive receiving means to selectively and respectively disconnect the reverse movement of said carriers from said linear drive means, and retainer means longitudinally spaced apart on said bridge respectively and progressively in the linear path of said drapery hook hanger means supporting the respective panel trailing edges to correspondingly retain and position said hook hanger means in groups along said bridge as said carriers are moved along said bridge, whereby said carriers can be driven in the forward direction by said forward drive means to sequentially position drapery curtain panels over a given drapery area, and in the reverse direction by said reverse drive means to individually respectively collapse or withdraw said panels from the given area to provide respective separate light openings for each panel or to selectively completely remove or collapse said panels from the given area.

4,240,490

SHADE FOR RECREATIONAL VEHICLE

Alan A. Ford, Irvine, Calif., assignor to Kirsch Company, Sturgis, Mich.

Filed Mar. 7, 1979, Ser. No. 18,298
Int. Cl.[3] E06B 9/08
U.S. Cl. 160—133 10 Claims



1. A window shade arrangement and means for holding same in a selected lifted position comprising:
a headrail;
a shade comprising a flexible fabric having its upper edge fixed to said headrail;
a valance likewise comprising a flexible fabric and having its upper edge fixed to said headrail;
interengageable means comprising two portions, one such portion being affixed to the lower edge of said valance and the other such portion being affixed to said shade.

4,240,491

THIN-FILM WINDOW FOR NUCLEAR INSTRUMENTS AND METHOD OF MAKING SAME

Ralph E. Bish, Freeport, and Arata Suzuki, Pittsburgh, both of Pa., assignors to Capintec Inc., Montvale, N.J.

Continuation of Ser. No. 718,674, Aug. 30, 1976, abandoned.
This application Jun. 14, 1978, Ser. No. 915,574
Int. Cl.[2] E06B 3/30, 9/24
U.S. Cl. 160—380 6 Claims

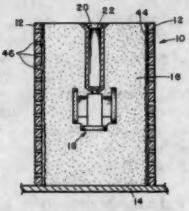
1. A thin-film window for a nuclear instrument comprising:
a frame ring having a surface which defines a first plane;
a thin film tightly stretched about said frame ring, said tightly stretched film defining a second plane substantially parallel to said first plane;
a clamp ring having a thin lip for securing said thin film about said frame ring in a tightly stretched condition, said thin lip acting as a spring to exert tension on said thin film in conjunction with said surface of said frame ring when said clamp ring is secured to said frame ring; and
securing means for securing said clamp ring to said frame ring in an area remote from said surface of said frame ring and remote from said thin lip of said clamp ring, wherein said thin lip, acting as a spring, takes up any slack between said clamp ring and said surface of said frame ring when at least one of said frame ring and clamp ring contracts in response to temperature changes so that said thin film remains fixed between said thin lip and said surface of said frame ring.

4,240,492

PROCESS OF FORMING MULTI PIECE VAPORIZABLE PATTERN FOR FOUNDRY CASTINGS

Robert B. Edwards, Niles, Mich., and Theodore D. Jayne, Painesville, Ohio, assignors to Nibco, Inc., Elkhart, Ind.

Filed Oct. 23, 1978, Ser. No. 953,553
Int. Cl.[3] B22C 7/02, 9/04
U.S. Cl. 164—34 12 Claims



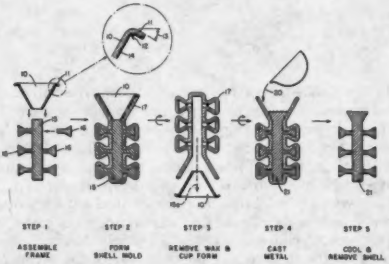
1. An improved process for casting valve bodies and the like, said process being of the type including the steps of fabricating a pattern from cellular plastic material, imbedding the pattern in dry sand within a box, said box being of the type having perforated side walls, connecting a sprue to the pattern, and pouring a metal charge into the sprue, the improvement comprising:
coating said pattern with a talc based ceramic coating for permitting the escape of gases upon vaporization of the pattern into the sand and preventing burn in of the sand into the metal charge, said coating releasing water of hydration during the casting process and having adequate refractory characteristics to withstand exposure to the metal charge without breaking down and providing geometric stability for the sand around the coated pattern, said coating further being chemically inert at the temperature of the metal charge, non-reactive with the pattern, non-adherent to the metal charge and being capable of air drying without cracking after application to the pattern.

4,240,493

SHELL INVESTMENT CASTING PROCESS

Russell F. Wilmarth, R.F.D. #5 Bade River Rd., Bedford, N.H. 03102

Filed Apr. 9, 1979, Ser. No. 28,167
Int. Cl.[3] B22C 7/00
U.S. Cl. 164—35 2 Claims



1. In a process of shell investment casting wherein a pattern of a desired object with a sprue is formed of a pattern wax, a shell mold is formed by dipping said pattern into a slurry of a refractory powder and drying, said shell mold is heated to remove said pattern wax and said object is subsequently cast in said shell mold; the improved method of forming a pouring cup into said sprue comprising attaching a hollow conical metal

pouring cup form to the inlet of said sprue form, said pouring cup form opening outwardly therefrom and having a reverse rolled lip on the larger end, forming said shell mold as aforesaid and applying said slurry over said pouring cup form and up to and under said reverse rolled lip and when removing said pattern wax also removing said pouring cup form to leave a pouring cup with a rolled outer lip leading into the sprue, said rolled outer lip extending substantially beyond the outer surface of said pouring cup.

4,240,494

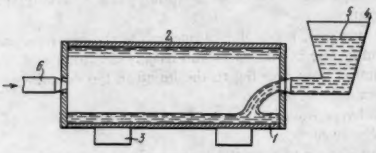
METHOD FOR CENTRIFUGAL CASTING OF TUBULAR METAL BLANKS

Ivan R. Kryanin, Sharikopodshipnikovskaya ulitsa, 2, kv. 68; Genrikh S. Mirzoian, Flotskaya ulitsa, 7, korpus 5, kv. 338; Nikolai N. Alexandrov, Sharikopodshipnikovskaya ulitsa, 2, kv. 126; David S. Shoshiashvili, Sumskoi proezd, 2, korpus 1, kv. 335; Viktor M. Krapukhin, Suvorovsky bulvar, 15, kv. 13, all of Moscow; Gleb S. Akubov, ulitsa Kommunarov, 212, kv. 54, Izhevsk; Evgeny V. Gerlivanov, ulitsa M. Gorkogo, 136, kv. 9, Izhevsk; Vladimir M. Lvov, ulitsa Udmurtskaya, 247, kv. 89, Izhevsk, and Mark M. Komarov, ulitsa 10 let Oktyabrya, 20, kv. 89, Izhevsk, all of U.S.S.R.

Filed Jul. 6, 1978, Ser. No. 922,582

Int. Cl.³ B22D *13/02*

U.S. Cl. 164—66 **5 Claims**



1. A method for centrifugal casting of tubular metal blanks, comprising the pouring of molten metal into a spinning mold at a positive pressure of 3 to 5 atmospheres of an inert gas delivered countercurrently thereinto, said mold featuring a gravitational factor at which the external surface of the tubular blank is formed wherein for the period of the pouring of metal into said mold the speed of rotation of the mold is increased to provide a gravitational factor thereof whose value exceeds by 300% said value of the gravitational factor of said mold at which the external surface of said tubular blank is formed.

4,240,495

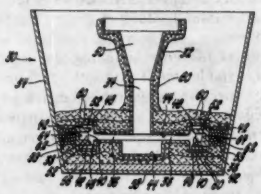
METHOD OF MAKING CAST METAL TURBINE WHEEL WITH INTEGRAL RADIAL COLUMNAR GRAIN BLADES AND EQUIAXED GRAIN DISC

George L. Vonnegut, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1978, Ser. No. 896,709

Int. Cl.³ B22D *27/04*

U.S. Cl. 164—125 **4 Claims**



1. A method of making a cast metal turbine wheel comprising a disc with integrally formed radial blades lying in the plane of said disc, wherein the grains of the disc are predominantly equiaxed and the grains of the blades are predominantly radially oriented, comprising:

casting molten metal into a mold having a cavity defining said disc, said blades, and annular portions lying on either side of the said plane in closely spaced apart relation to the cavity portions defining said blades,

withdrawing heat from the metal retained in the cavity portions defining the blades predominantly in a radially outward direction, the metal in the annular portions serving to inhibit cooling of the metal in the blade cavities in a direction other than radially outwardly, producing thereby radially aligned grains in said blades having grain boundaries lying substantially parallel to the blades' leading and trailing edges, and

cooling the metal in the cavity portion defining the disc to produce substantially equiaxed grains.

4,240,496

HEAT-INSULATING ARTICLES

Tarek El Gammal, Aachen, Fed. Rep. of Germany, assignor to Foseco Trading A.G., Chur, Switzerland

Filed May 30, 1979, Ser. No. 43,744

Claims priority, application United Kingdom, May 30, 1978, 24480/78

Int. Cl.³ B22C *3/00*

U.S. Cl. 164—138 **7 Claims**

1. In a shaped, refractory, heat-insulating article, for use in a metallurgical vessel, formed of a mixture comprising a particulate refractory material and a binder, the improvement comprising the inclusion of particulate de-fibred bagasse in said mixture.

4,240,497

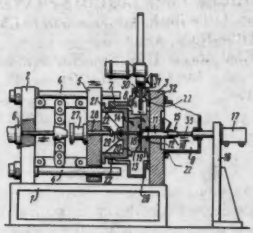
VACUUM METAL DIE-CASTING APPARATUS

Sergei G. Glazunov, Leninsky prospekt, 41, kv. 62; Alexei M. Khromov, Ukhtomskaya ulitsa, 36a, kv. 19; Vasily V. Merkulov, 3 Dorozhny proezd, 10, korpus 2, kv. 27; Igor B. Krjuchkov, Begovaya ulitsa, 22, korpus 16, kv. 68; Nikolai E. Klimov, Aviamotornaya ulitsa, 4, korpus 4, kv. 253, and Dmitry A. Filippov, Saratovskaya ulitsa, 8/10, kv. 138, all of Moscow, U.S.S.R.

Filed Jan. 16, 1978, Ser. No. 869,475

Int. Cl.³ B22D *17/10, 17/14, 17/20, 18/06*

U.S. Cl. 164—158 **5 Claims**



1. An improved multi-cycle, vacuum metal die casting apparatus not requiring depressurization during each recycle comprising: a frame; a plurality of stationary vertical plates attached to said frame; horizontal guide columns interconnecting said vertical plates; a mobile vertical plate slidably mounted between said vertical plates on said horizontal guide columns; a reciprocating drive means cooperatively associated with said mobile plate; a die holder rigidly secured to said mobile plate; a die having two halves, one half thereof being rigidly connected to said die holder, and the other half thereof, to the vertical plate separating a vacuum casting chamber from a melting chamber; a vacuum casting chamber housing being

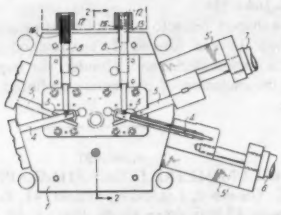
rigidly mounted on the vertical plate carrying said one half of the die; said vacuum casting chamber housing further being telescopically connected to said die holder and being provided with a spherical pivot and means for cleaning the die cavity in the form of a rod having a detachable actuating tool; sealing means provided at the connecting joints of said vacuum casting chamber housing with said die holder and said vertical plate separating said casting and said melting chambers; said die holder providing a continuous, translational mating sealing surface with the sealing means disposed between the stationary vacuum casting chamber housing and said die holder so as to permit the discharge of a finished casting without the need for depressurizing said casting chamber; a pressure chamber housing in said vertical plate connected through a gate to the cavity of said die; and means for the cyclic forced feeding of metal through said pressure chamber into said die.

4,240,498

DIE CASTING MACHINE FOR FORMING INTERNALLY-THREADED ARTICLES

Remi Frenette, 1772 Verdun, St. Bruno, Quebec, Canada

Continuation of Ser. No. 842,378, Oct. 11, 1977, abandoned.
This application Mar. 22, 1979, Ser. No. 22,845
Claims priority, application Canada, Jul. 5, 1977, 282036
Int. Cl.³ B22D *17/24*
U.S. Cl. 164—303 **3 Claims**



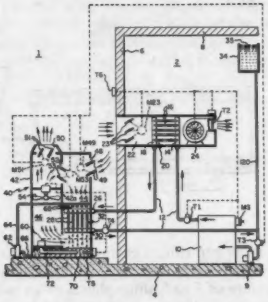
1. In a die casting machine of the type having a mold comprising a stationary mold half and a movable, driven mold half forming between them molding cavities adapted to mold articles, with at least one part formed through the mold and communicating into each of said cavities to charge a casting material into the cavities; the improvement comprising a pair of threading devices extending into said cavities at an angle with respect to the plane of operation of said molds and through respective bores formed in the mold, said devices being adapted to form a threaded hole in articles formed in said cavities; means for operating the movable mold half to move it toward and away from the stationary mold half; and driving means, independent of the operating means, mounted externally of the molds on the stationary mold half for rotating said threading devices to run them in and out of said cavities, each said threading device being axially retractable from and insertable into the cavity only by rotation by said driving means and comprising an elongated rod member having interconnected upper and lower portions, the upper portion being integrated to the external driving means and the lower portion having a first thread on its lower end and protruding into the mold cavity for casting therearound and a second thread outside the cavities and engaging corresponding threads in the mold for axially lowering and raising the lower, threaded portion of the rod member when said rod member is rotated by the external driving means; said driving means comprising a gear box detachably mounted on the stationary mold half and containing a pair of pinions and a linearly operated rack; said driving means being operable to rotate and thereby axially retract the threading devices from the cavities before the operating means moves the movable mold half away from the stationary mold half and also being operable to rotate and thereby axially insert the threading devices into the cavities after the operating means moves the movable mold half towards the stationary mold half; the upper ends of said threading rod members incorporating geared pins adapted for rotation by said pinions when the rack is linearly operated thereby raising and lowering the threading rod members.

4,240,499

BALANCED WASTE HEAT RECOVERY AND DISSIPATION SYSTEM

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,909
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—1 **14 Claims**



12. A method for selectively recovering heat from a coolant fluid wherein the latter absorbs heat from heat generating equipment and warming an enclosed air space with recovered heat while concurrently dissipating unrecovered heat, said method including the following steps:

passing said coolant fluid through said heat generating equipment to absorb heat therefrom,

passing said coolant through a first heat exchanger within an enclosed air space,

selectively passing air through said first heat exchanger and into said enclosed air space after being warmed by said first heat exchanger,

monitoring the temperature of the air passing through said first heat exchanger on the downstream side thereof and stopping the passage of air through said first heat exchanger when the temperature thereof downstream of said first heat exchanger is less than a predetermined level,

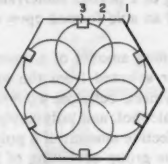
passing said coolant through a second heat exchanger to cool said coolant fluid to a predetermined temperature by dissipating excess heat not recovered by said first heat exchanger, and

passing air through said first heat exchanger at predetermined intervals after the passage of air therethrough has stopped, sensing any temperature rise of said passage of air downstream of said first heat exchanger to or above said predetermined level as resulting from corresponding changes in operating conditions, and continuing to pass air through said first heat exchanger as long as said temperature downstream of said first heat exchanger is at or above said predetermined level.

4,240,500
HEAT EXCHANGE APPARATUS

Peter Rohner, Isernhagen, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,055
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834593
Int. Cl.³ F28D 15/00
U.S. Cl. 165—105 **10 Claims**



1. Heat exchange apparatus comprising at least one sealed evacuated tube wherein a heat transfer fluid flows between hot and cold zones with the fluid being evaporated in the hot zone and condensed in the cold zone, the improvement comprising:

said tube being corrugated transverse to its longitudinal axis for increased surface area, and wound to provide a plurality of windings, a first portion of each winding being in the hot zone and a second portion of each winding being in the cold zone; said apparatus further comprising:

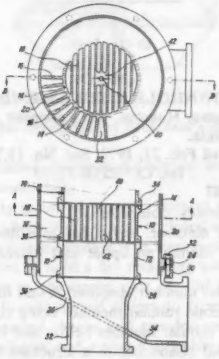
tubular container comprised of a material of high heat conductance and formed to have a polygonal cross section within which said wound tube is axially positioned; and

connector means comprised of a material of high heat conductance and positioned within said tubular container for attaching first portions of said plurality of windings to an interior surface of said tubular container, so as to provide a high heat conductance path from the outside surface of said tubular container to the inside surface portions of said plurality of windings in the hot zone.

4,240,501
HEAT EXCHANGER WITH JUXTAPOSED ELEMENTS

Andre L. Kovacs, 177, rue de la Convention, 75015 Paris, France

Filed Apr. 27, 1978, Ser. No. 900,476
Claims priority, application France, May 3, 1977, 77 13327
Int. Cl.³ F28F 7/02
U.S. Cl. 165—165 **9 Claims**

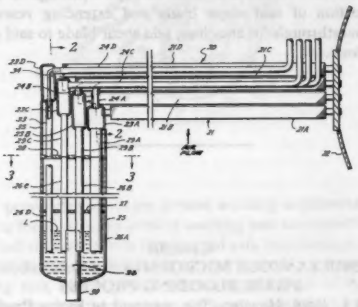


1. A heat exchanger which comprises a plurality of hollow cylindrical units, superposed contiguously on a common axis, said units having outer fins distributed on the outer periphery thereof and inner fins on the inner periphery thereof, said outer and inner fins extending outwardly and inwardly, respectively from said periphery in planes parallel to the direction of superposition of the cylindrical units and parallel to said common axis, the interior space defined by each of said hollow cylindrical units providing a first channel for circulation of a fluid along the longitudinal axis of the cylinders, and an envelope in which said cylindrical units are positioned, the inner wall of said envelope defining, with the outer wall of the superposed cylinders, a second channel for the circulation of a fluid along said axis.

4,240,502
CONDENSING HEAT EXCHANGER

Michael W. Larinoff, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Nov. 26, 1979, Ser. No. 94,117
Int. Cl.³ F28B 9/08, 9/10
U.S. Cl. 165—112 **2 Claims**



1. A heat exchanger, comprising a tube bundle having a plurality of parallel rows of tubes adapted to be disposed in generally horizontal positions and arranged successively in the direction of air flow therepast, an inlet header for introducing vapor into one end of the tubes of the rows, a plurality of outlet headers each connecting with the opposite ends of the tubes of one row for receiving condensate and uncondensed vapor therefrom, the outlet header connecting with the tubes of each successive row having a lower end which extends below the upper end of the outlet header connecting with the tubes of the preceding row, each outlet header having an outlet from the lower end thereof, a generally upright condensate drain pot disposed beneath the outlet headers and having a plurality of water leg seal tubes therein, means connecting the outlet from each outlet header with one water leg seal tube, means for maintaining the level of condensate within the drain pot above the lower ends of the leg seal tubes so as to isolate pressure within said outlet headers from one another, means connecting one outlet header above the lower end thereof with the drain pot above the condensate level therein so as to introduce uncondensed vapor from said one outlet header into said drain pot, and means for automatically draining condensate from the pot when the vapor condensing system is shut down.

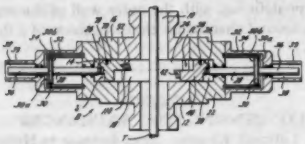
4,240,503
BLOWOUT PREVENTER SHEARING AND SEALING RAMS

James H. Holt, Jr., and Morris Newman, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed May 1, 1979, Ser. No. 34,982
Int. Cl.³ E21B 29/00
U.S. Cl. 166—55 **31 Claims**

20. A blowout preventer having a shearing ram for shearing an object in a bore of the blowout preventer in conjunction with another ram, comprising:

(a) a carrier block for movement to and from the bore;
(b) a shear blade mounted with an inner portion of said carrier block nearest the bore for shearing the object;
(c) a mounting tongue on said shear blade extending into a slot formed in said carrier block for supporting said shear



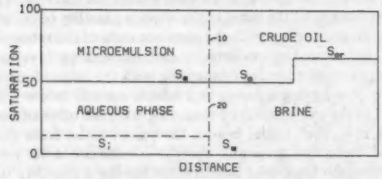
blade against downward movement on contacting the object during shearing; and
(d) fastener means insertable through openings in a front portion of said shear blade and extending rearwardly therethrough for attaching said shear blade to said carrier block.

4,240,504

SIMULTANEOUS MICROEMULSION-AQUEOUS PHASE FLOODING PROCESS

Ronald L. Reed, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 21, 1978, Ser. No. 972,118
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 **17 Claims**



1. A method for recovering fluids from a subterranean formation containing hydrocarbon and aqueous liquids of known viscosities which comprises:
(a) formulating a middle- or upper-phase microemulsion having a viscosity greater than said hydrocarbon and aqueous liquids;
(b) formulating an aqueous phase having a viscosity greater than said aqueous liquids, the viscosity ratio of said aqueous phase to said microemulsion substantially approximating the viscosity ratio of said aqueous liquid to said hydrocarbon liquid;
(c) simultaneously injecting into said formation through an injection well said aqueous phase and said microemulsion at an injection rate ratio which gives similar hydrocarbon, microemulsion and aqueous phase velocities through said formation;
(d) displacing said microemulsion, aqueous phase and hydrocarbon liquids through said formation to a production well; and
(e) producing said hydrocarbon liquids through said production well.

4,240,505

WELL ACIDIZING COMPOSITIONS AND METHODS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1978, Ser. No. 902,652
The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.
Int. Cl.[3] E21B *43/27*
U.S. Cl. 166—302 **22 Claims**

1. An acidic gelled composition suitable for matrix acidizing or fracture acidizing of a porous subterranean formation susceptible to attack by an acid formed upon admixing
(a) water,
(b) a water-thickening amount of a water-dispersible polymeric viscosifier selected from the group consisting of acrylamide polymers, cellulose ethers, polyalkylene oxides, polyvinyl alcohol, and polyvinylpyrrolidone,
(c) a small, but effective amount of a polyphenolic material selected from the group consisting of lignite, causticized lignite, and sulfomethylated lignite, and
(d) a small, but effective amount of an acid sufficient to cause gelation and to produce a strongly acidic gelled composition, said acid being effective for dissolving at least a portion of a formation; said polymer, said acid, and said polyphenolic material in amounts used being sufficiently compatible with each other in an aqueous dispersion thereof to permit gelation of said acidic gelled composition.

14. An acidic gelled composition suitable for matrix acidizing or fracturing acidizing of a porous subterranean formation susceptible to attack by an acid formed upon admixing
(a) water, (b) a water-thickening amount of a water-dispersible polymeric viscosifier selected from the group consisting of cellulose ethers, polyalkylene oxides, polyvinyl alcohol, and polyvinylpyrrolidone,
(c) a small, but effective amount of a flavotannin selected from the group consisting of quebracho, sulfomethylated quebracho, and causticized quebracho, and
(d) a small, but effective amount of an acid sufficient to cause gelation and to produce a strongly acidic gelled composition, said acid being effective for dissolving at least a portion of a formation; said polymer, said acid, and said flavotannin in amounts used being sufficiently compatible with each other in an aqueous dispersion thereof to permit gelation of said acidic gelled composition.

4,240,506

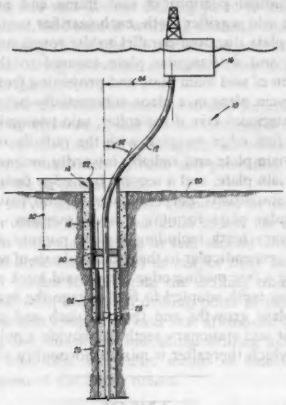
DOWNHOLE RISER ASSEMBLY

Donald W. Dareing, Houston, Tex., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 21, 1979, Ser. No. 13,768
Int. Cl.[3] E21B *17/01*
U.S. Cl. 166—367 **21 Claims**

1. A riser assembly, comprising:
a first tubular member, embedded in a floor of a body of water, and having an upper end extending above said floor;
a second tubular member, disposed in said first tubular member, said second tubular member being rigidly connected to said first tubular member below said floor and having an upper end connected to a structure floating on said body of water, and said first tubular member having a constant internal diameter portion extending from said rigid connection to said upper end of said first tubular member; and
said first and second tubular members being so constructed

that said second tubular member contacts said upper end of said first tubular member on said constant internal



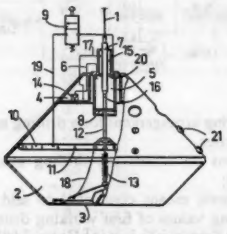
diameter portion thereof when said floating structure is offset from said first tubular member.

4,240,507

FIRE EXTINGUISHING SYSTEM HAVING A DOSAGING CYLINDER FOR AN ADDITIVE

Eero Hokkanen, Askola, Finland (07500)

Filed May 15, 1979, Ser. No. 39,386
Claims priority, application Finland, May 17, 1978, 781576
Int. Cl.³ A62C *31/30*
U.S. Cl. 169—53 **7 Claims**



1. Apparatus for extinguishing fires, said apparatus comprising:

a first water cistern comprising a bottom and means therein defining a water exit;

a gate movably mounted in said cistern to move between a position in which said opening is closed and another position in which said opening is at least partially open;

a second cistern to hold a fire retarding additive;

transfer means in the upper part of said first cistern and connected to said second cistern to receive said additive from said second cistern said transfer means comprises a dosaging cylinder and a piston movable therein and connected to said suspension means; and

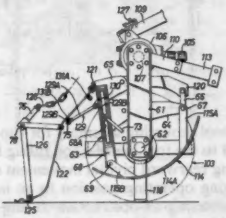
suspension means operatively connected to said transfer means to cooperate therewith to draw a quantity of said additive from said second cistern into said cylinder and to dispense at least some of said quantity into said water cistern and to return at least some of the remainder of said quantity to said second cistern.

4,240,508

POWER-DRIVEN ROTARY GROUND WORKING IMPLEMENT

Toshio Ishiguro, and Minoru Kyotani, both of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 23,133
Claims priority, application Japan, Mar. 23, 1978, 53/38398[U]; Apr. 18, 1978, 53/52246[U]; Apr. 18, 1978, 53/52255[U]
Int. Cl.³ A01B *33/02, 33/12*
U.S. Cl. 172—72 **7 Claims**



1. A power-driven rotary ground working implement comprising a frame, a rotary ground working unit supported by the frame and rotatable about a horizontal axis, transmission means provided for the working unit, a cover assembly covering the working unit, and a ground contacting stabilizer of the skid type supported by the frame on at least one side of the working unit and positioned radially inwardly from the outer periphery of the working unit, the working implement including stand means for supporting the working implement with stability as disconnected from a power vehicle, the stand means being characterized in that:

the cover assembly **4**,**104** comprises a main cover **20**, **120** fixed to the frame **2**, **102** and a movable cover **22**, **121** upwardly or downwardly connected to a rear portion of the main cover **20**, **120** by bent members **21**, **121**, the movable cover **22**, **122** being supported by a frame **27**, **127** with a suspender **28**, **128**;

the outer periphery of the working unit **3** and a rear portion **25**, **125** of the movable cover **22**, **122** are in contact with the ground at the front and rear locations spaced apart from each other on opposite sides of the bent members **21**, **121** on the movable cover **22**, **122**, the center of gravity of the working implement **1**, **101** being positioned between the front and rear contacting portions;

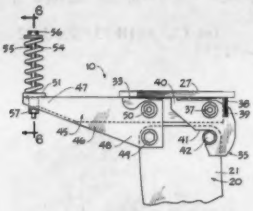
the outer periphery of the working unit **3** and the rear portion **25**, **125** of the movable cover **22**, **122** are made cooperative to serve as the stand means by holding means **29**, **129** provided for the movable cover **22**, **122** on at least one side of the working unit; and

the holding means **29**, **129** comprises a first engaging portion **30**, **130** provided on the frame **2**, **102** below the bent member **21**, **121** on the movable cover **22**, **122**, at least one second engaging portion **31**, **131A**, **131B** at a longitudinally intermediate side portion of the movable cover **22**, **122** and an engaging member **29A**, **129A** removably engageable with the first engaging portion **30** **130** and with the second engaging portion **131A**, **131B**, so that the engaging member **29A**, **129A** restrains the movable cover **22**, **122** from moving about the bent member **21**, **121** relative to the frame **2**, **102** when the rear portion **25**, **125** of the cover **22**, **122** is in contact with the ground and when the working implement **1**, **101** is lifted in its entirety with the rear portion **25**, **125** raised to open the working unit **3** to the rear.

4,240,509
TOOL MOUNTING ASSEMBLY FOR SOIL TILLING IMPLEMENT

Elmer K. Hansen, 801 S. Martha, Sioux City, Iowa 51102

Filed Dec. 11, 1978, Ser. No. 968,354
Int. Cl.[3] A01B 61/04
U.S. Cl. 172—269 2 Claims



1. A ground tool mounting assembly for supporting a shank of a ground tool to the tool bar of a soil tilling farm implement and for providing rearward pivotal movement of the tool from a ground engaging operating position to an inoperative position upon encountering an obstruction during a tilling operation, said assembly comprising:

(a) a support member,

(b) means for securing said support member to said tool bar,

(c) a link assembly pivotally connected to said support member at a first pivot connection and pivotally connected to said shank at a second pivot connection, said pivot connections permitting rearward movement of said shank upon rotation of the link assembly about said first connection,

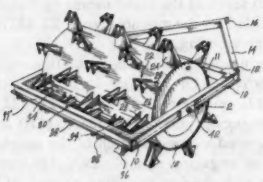
(d) pressure means for applying a yieldable pressure on said link assembly to oppose rotation of the link assembly about said first pivot connection, and

(e) coacting latch means on said shank and on said support member for releasably locking said shank to prevent rotation of said shank about said second pivot away from said ground engaging operating position, and upon initial rearward movement of the ground tool in response to said ground tool striking an obstruction, releasing said shank thereby permitting free pivotal movement of said shank and ground tool about said second pivot to said inoperative position.

4,240,510
COMBINED SCARIFIER AND BRANCH SLASHING AND CRUSHING IMPLEMENT

Armand Morin, 158-3rd Avenue, Chibougamau, Quebec G8P 1Z9, Canada

Filed Jan. 5, 1979, Ser. No. 1,221
Int. Cl.[3] A01B 29/06
U.S. Cl. 172—547 6 Claims



1. A combined scarifier and branch slashing and crushing implement comprising:

(a) a rectangular frame having end portions and straight front and back longitudinal portions;

(b) a cylindrical roller rotatably mounted on said end portions and extending within said frame with its axis of rotation substantially parallel to said longitudinal portions;

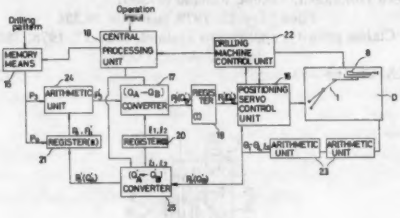
(c) plural rows of longitudinally spaced scarifier teeth secured to and projecting from said roller for working the soil; and

(d) stationary teeth mounted on both said front and said back longitudinal portions of said frame and projecting between said scarifier teeth, each scarifier tooth including a main plate disposed parallel to the rotational axis of said roller and a triangular plate secured to the outer end portion of said main plate and projecting from one side of said main plate in a plane substantially perpendicular to the rotational axis of the roller, said triangular plate having a first edge merging with the radially outer edge of said main plate and radially inwardly inclined relative to said main plate, and a second free edge facing said roller and substantially perpendicular to said main plate, said triangular plate forming a hook member, each of said stationary teeth including a plate portion disposed in a plane perpendicular to the rotational axis of said roller and having a free cutting edge facing said hook member, said scarifier teeth adapted to first engage the branches, roots and plant growths and then to slash and cut the same against said stationary teeth to provide a pulverized mixture which thereafter is mixed thoroughly with the soil.

4,240,511
DRILLING MACHINE CENTERING ARRANGEMENT

Toru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 7, 1978, Ser. No. 914,746
Claims priority, application Japan, Jun. 7, 1977, 52/66997
Int. Cl.[2] E21C 11/02
U.S. Cl. 173—1 5 Claims



1. A centering arrangement for a drilling machine or the like which comprises,

boom means on which the drilling machine is operably mounted;

first arithmetic means connected to said boom means for calculating values of first working distance and working direction from a reference point on a drilling pattern plane to an actual reference point on a working plane immediately in front of a working face to be drilled, said first working distance and direction being calculated in a boom coordinate system and being provided as output from said first arithmetic means;

first converter means connected to said first arithmetic means for converting the values of said first working distance and direction from said boom coordinate system to a rectangular coordinate system, and providing said converted values as outputs;

a memory means for storing coordinate values of said reference point and a desired drilling point in said drilling pattern plane, said coordinate values being in said rectangular coordinate system and being supplied as output from said memory means;

second arithmetic means connected to said memory means and said first converter means for receiving the outputs of said first converter means and said memory means and for processing these values to calculate values of second working distance and working direction from said actual

reference point to an actual drilling point in said working plane, said actual reference point and said actual drilling point in said working plane corresponding to said reference point and said desired drilling point in said drilling pattern plane, said second working distance and working direction being calculated in said rectangular coordinate system and being provided as output from said second arithmetic means;

a second converter means connected to said second arithmetic means for converting said second working distance and direction values from the rectangular coordinate system to the boom coordinate system, and providing said converted values as output; and,

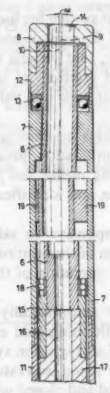
positioning servo control means connected to said second converter means and to said boom means for displacing said boom means according to said second working distance and direction supplied as output from said second converter means for bringing the drilling machine into adjustment with the actual drilling point in the working plane, and also coupled to said first arithmetic means for receiving the values for said actual drilling point calculated by said first arithmetic means as feedback upon displacement of the boom means.

4,240,512

ARRANGEMENT FOR GUIDING A BORE-CROWN OR BIT ALONG A GIVEN PATH

Mats T. Haglund, Malmstavägen 25, S-971 00 Malmberget, Sweden

Filed Feb. 26, 1979, Ser. No. 14,975
Claims priority, application Sweden, Mar. 6, 1978, 7802488
Int. Cl.[3] E21B 7/08
U.S. Cl. 175—75 **4 Claims**



1. A drilling assembly for use in earth and rock to correct misalignment of a drilled hole, including:

an outer non-rotatable guide tube,

a drive shaft rotatably mounted in the outer guide tube,

a drill bit connected to one end of the drive shaft and journalled on the outer guide tube,

a drill rod connected to the opposite end of the drive shaft, the axis of rotation of the drill bit being angularly offset relative to the longitudinal axis of the outer guide tube, and

the longitudinal axis of the drill bit end of the drive shaft being aligned with the axis of rotation of the drill bit,

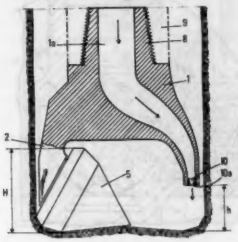
said drive shaft being bent relative to the outer guide tube with the drill rod end of the drive shaft being co-axial with the outer guide tube and the intermediate portion of the drive shaft being eccentrically journalled in the outer guide tube.

4,240,513

DRILL BIT WITH SUCTION JET MEANS

Yvon Castel, Pau, and Henri Cholet, Le Pecq, both of France, assignors to Institut Francais du Petrole, France

Filed Jan. 26, 1978, Ser. No. 872,362
Claims priority, application France, Jan. 28, 1977, 77 02689
Int. Cl.[2] E21B 9/08
U.S. Cl. 175—340 **13 Claims**



1. A drill bit comprising a body member rotatable about an axis by a bit holder, said body member being provided with a recess which can be supplied with a pressurized fluid through the bit holder, a plurality of rotatable elements carried by the body member and provided with ground cutting means in contact with the hole bottom, flushing means for delivering at least one flushing jet directed towards the hole bottom, said flushing means comprising at least one nozzle having a first calibrated aperture provided in said body member and in direct communication with said recess, said first aperture opening in a first space comprised between two adjacent rotatable elements, eduction means for the drilling fluid which has flushed the rotatable elements, said eduction means being adapted to deliver at least one upwardly directed fluid jet, said eduction means comprising at least one second aperture provided in said body member and located above a second space comprised between two adjacent rotatable elements, said nozzle being arranged so as to deliver through said first calibrated aperture a flushing jet having a direction substantially parallel to the drill bit axis and said first calibrated aperture of said nozzle opening at a distance from the hole bottom comprised between ⅓ H and 4/5 H, H being the height of the rotatable elements measured parallelly to the drill bit axis.

4,240,514

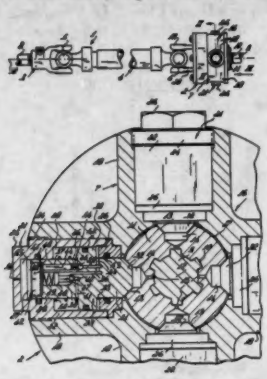
OVERLOAD COUPLINGS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 7, 1978, Ser. No. 875,948
Claims priority, application Netherlands, Feb. 11, 1977, 7701445
Int. Cl.[3] B60K 25/06; F16D 11/00
U.S. Cl. 180—53 D **13 Claims**

1. A tractor comprising a frame and driving means connected to a driven shaft having an overload coupling, said coupling, having a part that operatively disconnects from said shaft upon torque overload, said tractor having a driver station and a signalling device that indicates overload occurrence positioned to be discernible from the station, said signalling device comprising a pressure gauge in communication with said part, said gauge and coupling being in hydraulic communication with a space that has a constant volume during normal operation, the hydrostatic pressure in said space being dependent on the torque, said shaft being an input shaft directly driven by the driving means, an output shaft being engaged by said overload coupling and said gauge indicating torque transmitted by the output shaft, at one speed of said driving means,

the output shaft having a first rotary speed and a second rotary speed that is substantially higher, the hydrostatic pressure in



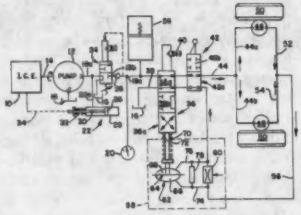
said coupling being approximately the same at both speeds and said gauge indicating the torque at each speed.

4,240,515

VEHICLE HYDRAULIC DRIVE SYSTEM

Robert W. Kirkwood, 210 Thorncliff Rd., Kenmore, N.Y. 14223

Filed Dec. 8, 1978, Ser. No. 967,776
Int. Cl.³ B60K *1/00*
U.S. Cl. 180—165 **48 Claims**



1. A vehicle drive system comprising:

a fluid pump means with associated drive means for supplying a flow of pressurized fluid from a fluid sump to a pressurized fluid supply line;

a pressurized fluid accumulator in fluid communication with said pump means through said pressurized fluid supply line and adapted to receive pressurized fluid therein and discharge pressurized fluid therefrom;

a pressure regulating valve in fluid communication with said fluid pump means and pilot-operated in response to the pressure of the fluid flow in said supply line to a first state in which the flow of fluid is directed to said accumulator or to a second state in which the fluid flow is directed to a fluid sump;

a propulsion control valve in fluid communication with said pump means and having finite fluid control states consisting of a fully open position corresponding to a forward thrust position and a fully closed position corresponding to a neutral position;

at least one fluid motor in fluid communication with said propulsion control valve adapted to receive a flow of fluid through a supply line at full system pressure and flow rate and return said fluid through a return line when said valve is actuated to its fully open position, said fluid motor coupled to a ground-engaging traction-element;

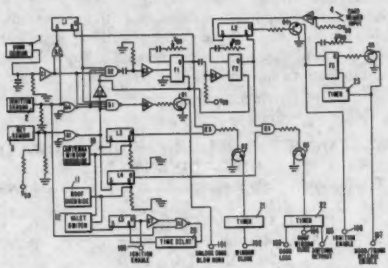
speed control means responsive to the fluid flow rate through said motor and connected to said propulsion control valve, said speed control means adapted to actuate said propulsion control valve to its fully open position when said fluid flow rate through said motor is below a selected percentage of a predetermined flow rate that corresponds to a predetermined upper speed-limit and adapted to actuate said propulsion control valve to its fully closed position when the fluid flow rate is at or above said predetermined flow rate.

4,240,516

VEHICLE SECURING AND LOCKOUT PREVENTION SYSTEM

James R. Henderson, and Larry E. Lewis, both of Detroit, Mich., assignors to Keycon Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 943,578, Sep. 18, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,859
Int. Cl.³ B60R *25/04*
U.S. Cl. 180—289 **21 Claims**



1. An electronic control system for use in a motor vehicle for enabling the operation of the vehicle and securing the accessories of said motor vehicle, said vehicle having a key switched and electrically operated ignition, at least one vehicle door having a door lock, and at least one vehicle accessory, which system comprises:

(a) coding means having a predetermined code,

(b) detection and identification means for detecting and identifying said coding means and producing an enabling signal upon detection and identification of said predetermined code,

(c) enabling means responsive to said enabling signal for enabling the operation of the ignition system of the vehicle and for enabling the operation of the vehicle accessories, and

(d) securing means for automatically securing the vehicle accessories and conditioning said enabling means to disable the operation of said ignition system and accessories, said securing means being activated when at least one vehicle door is opened and closed while the ignition key is removed from the ignition switch.

4,240,517

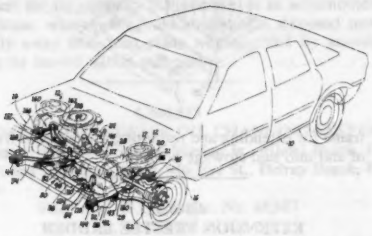
POWERTRAIN AND INDEPENDENT SUSPENSION MOUNTING ARRANGEMENT FOR FRONT-WHEEL-DRIVE VEHICLE

John H. Harlow, Jr., Farmington Hills, and Joseph Maywood, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1979, Ser. No. 29,625
Int. Cl.³ B60K *5/04*
U.S. Cl. 180—295 **3 Claims**

3. In a front-wheel-drive vehicle having a cradle that is cushion mounted on the vehicle body and to which independent front-suspension control arms are mounted and further having a powertrain including an engine and transmission and differential that is cushion mounted on the cradle and wherein both the engine and transmission are positioned transversely in

the vehicle body: the improvement comprising in combination, a plurality of cradle mounts supporting the cradle with all its weight at mounting points on the vehicle body, said cradle mounts including cushion and rate control means arranged so as to provide a soft substantially linear spring rate at small cradle vibration amplitudes and a non-linear spring rate at large cradle vibration amplitudes in both a fore and aft direction and a vertical direction relative to the vehicle body and a stiff substantially linear rate at all cradle vibration amplitudes in a lateral direction relative to the vehicle body, a plurality of powertrain mounts supporting the powertrain with all its weight at mounting points on the cradle, said powertrain mounts including cushion and rate control means arranged so as to provide soft substantially linear spring rates at all powertrain vibration amplitudes in the fore and aft, vertical and



lateral directions and at small powertrain vibration amplitudes in a pitching direction relative to the vehicle body and further provide a non-linear spring rate at large powertrain vibration amplitudes in the pitching direction, and powertrain pitch reaction means connected between the powertrain and a mounting point on the vehicle body, said powertrain torque reaction means including a strut extending in the fore and aft direction so as to be in either tension or compression on pitching of the powertrain depending on whether the transmission is in forward or reverse drive, said powertrain torque reaction means further including cushion and rate control means at opposite ends of said strut arranged so as to provide a soft substantially linear spring rate at small powertrain vibration amplitudes in the pitching direction and a non-linear spring rate at large powertrain vibration amplitudes in the pitching direction.

4,240,518

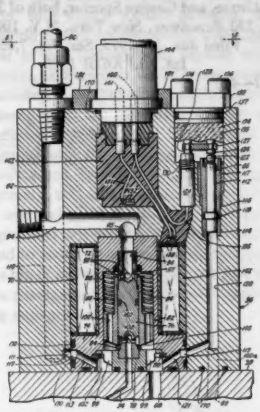
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING A MULTIPLICITY OF AIR GUNS FOR SEISMIC SURVEYING

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Jun. 22, 1978, Ser. No. 917,794
Int. Cl.[3] G01V *1/38*
U.S. Cl. 181—107 **44 Claims**

6. A solenoid valve assembly suitable for use in controlling the movement of a shuttle to fire an air gun, said valve assembly comprising:

a solenoid valve for initiating firing of said air gun and for shutting off the entire supply of pressurized gas to said air gun when actuated, and



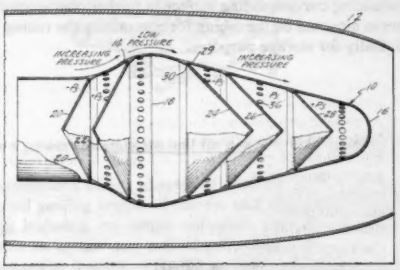
a fluid pressure sensor for detecting variations in fluid pressure caused by movement of said shuttle.

4,240,519

ACOUSTICAL TURBINE ENGINE TAIL PIPE PLUG

Thomas A. Wynosky, Madison, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 2, 1979, Ser. No. 54,099
Int. Cl.[3] F01N *1/02*; F02K *1/04*
U.S. Cl. 181—213 **3 Claims**



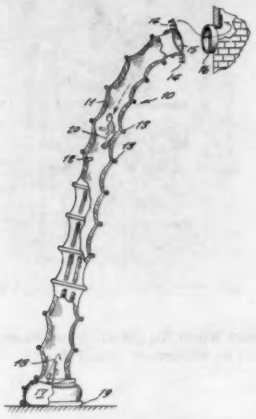
1. A muffler plug mounted in the tail pipe of a turbine power plant including a curved hollow body generated about an axis of revolution having a generally symmetrical configuration along an axial centerline, said body being spaced from the wall of the tailpipe to define therewith an annular passage for flowing the power plant's working medium, a plurality of concially shaped spaced members each having its apex located coincidental with said axial centerline and defining therewith a plurality of axially spaced subchambers, openings in said body for leading grazing flow into said subchambers from said annular passage, the base of each of said conically shpaed member bearing against said body for structurally supporting said body and said members being in compression so as to compensate for radial growth from the heat transfer from the heat from the working medium.

4,240,520

HI RISE ESCAPE TUNNELS AND SLIDE

Janet L. LaGrone, and George Spector, both of 3615 Woolworth Building, 233 Broadway, New York, N.Y. 10007

Filed Jan. 29, 1979, Ser. No. 7,652
Int. Cl.³ A62B *1/20*
U.S. Cl. 182—48 **3 Claims**



1. A high rise escape tunnel, comprising in combination, a collapsible tubing of fireproof fabric, a padding on its inner side a plurality of spaced apart metal rings mainted around an outer side of said tubing, an entry opening at an upper end of said tubing, an exit doorway near a lower end, a soft pad at said lower end for resting on a ground, said pad encompassed by a weighted ring for contacting the ground, means for connecting said entry opening to a building exit whereby said tunnel assumes curved shape having increasing inclination towards the ground, said rings having equal diameter whereby said tubing fabric sags inwardly between the rings to provide a smooth undulating curvate sliding surface in further combination with means mounted on the tubing for contracting the tubing longitudinally for storage purposes.

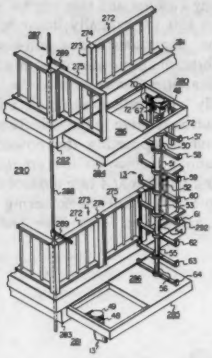
4,240,521

DRAWER TYPE EMERGENCY ESCAPE

Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Sapporo, Japan

Filed May 9, 1979, Ser. No. 37,335
Claims priority, application Japan, Jan. 27, 1979, 54-8464
Int. Cl.³ E06C *9/10*; B60R *3/00*
U.S. Cl. 182—84 **19 Claims**

1. A drawer type emergency escape comprising:
a stowage box adapted to be attached to a support;
a slidable frame adapted to be slidably extended out of and retracted into said stowage box;
a telescopically extensible escape means attached to said slidable frame to be received into and extended out of the frame; and
a shift mechanism including a drive arm connected to a shift handle, a slide shift link, a connection link connecting said drive arm to said slide shift link and an extensible tong means disposed between said slide shift link and slidable



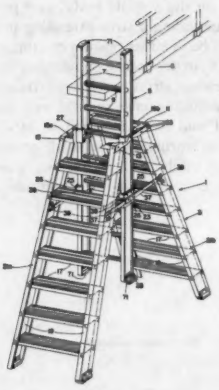
frame for extending and retracting said slidable frame out of and into said stowage box.

4,240,522

EXTENSION TRESTLE LADDER

Kenneth J. Spear, Sharon, and Donald L. Shawkey, Sandy Lake, both of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Filed Dec. 11, 1978, Ser. No. 968,210
Int. Cl.³ E04G *1/30*; E06C *1/18*
U.S. Cl. 182—105 **4 Claims**



1. A locking device for locking support of the fly assembly of an extension trestle, in which the trestle is formed with a pair of supporting ladders and a fly assembly, each ladder and fly assembly comprising a pair of opposite side rails and a plurality of rungs or steps, the side rails of said supporting ladders having on the top of each side rail a bracket secured thereto and to the upper rung or step of each said ladder, the free ends of oppositely facing said brackets adapted to project toward each other outwardly of the rail with which it is associated and to overlap, means for hingedly securing said free ends of the brackets together wherefor the opposite side rails of opposite of said supporting ladders are hingedly connected at their upper end portions, opposite spreader means each pivotally secured at its outer ends to brackets secured to a mediate portion of a pair of planar spaced side rails of opposite support ladders, said spreader means each having its opposite ends pivotally secured together by connecting means, oppositely

disposed generally U-shaped upper and lower sleeve guide means, the upper guide means being mounted on the means hingedly securing the top brackets together, the lower guide means being secured to the pivotal connection of said spreader means, said upper and lower sleeve guide means being spaced and aligned vertically, said fly assembly being extended or lowered by movement within the aligned sleeve guide means in a generally vertical plane by selective cooperation with a rung of the fly assembly, said device comprising:

Support means for supporting engagement of a selected rung of the fly assembly along at least one-half of the length of said rung.

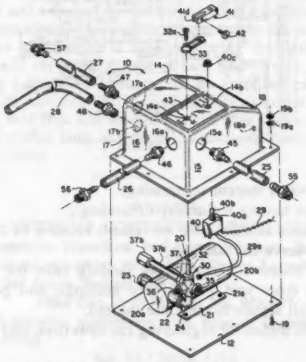
said support means being pivotally attached to the oppositely disposed upper guide means and being radially displaceable from a peselected support position, wherein the support means is disposed transverse to the plane in which the fly assembly is moveable, to an accomodating position, wherein the support means is disposed proximally away from said plane whereby said fly assembly may be moved within said plane.

4,240,523

MOTORIZED CRANKCASE OIL CHANGING SYSTEM

Jack Nestor, 110 1st Ter., San Marino Is., Miami Beach, Fla. 33139, and Raymond Zager, 946 Eve St., Delray Beach, Fla. 33444

Filed Aug. 23, 1979, Ser. No. 68,907
Int. Cl.³ F01M *11/04*
U.S. Cl. 184—1.5 **16 Claims**



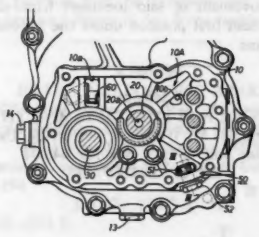
5. In a system for draining and refilling the oil of a crankcase having a hose coupling threaded into the crankcase drain opening, a central unit comprising an electric motor driving a reversible pump, a selector valve, and a three position toggle switch having a toggle projecting from a threaded neck and being wired to supply DC power from a source to said electric motor, said wiring providing for a middle, perpendicular, open circuit position for the toggle between oppositely inclined toggle positions for energizing said motor and driving said pump in "forward" or "reverse" directions to selectively "fill" or "drain" said crankcase, said pump having a pair of opposite ports, a first of said ports being connected to a drain/refill hose having an opposite end positioned within an oil discharge or an oil supply receptacle, said selector valve having a pair of ports, a stem and a perpendicularly extending handle having a longitudinal axis axtending radially from said stem for rotating the stem between "open" and "closed" positions, one of said valve ports being connected to the second of said pump ports, a hose connecting the other of said valve ports to said crankcase coupling enabling oil to be pumped directly from or into the crankcase when the valve is in said open position in accordance with the toggle switch selected position, a housing enclosing said central unit having a wall portion serving as a control panel formed with a pair of spaced openings, said valve stem extending through a first of said openings positioning the longitudinal axis of said handle in parallel spaced relation to said wall portion, said toggle switch threaded neck being secured in the second of said openings with said toggle extending perpendicular to said housing wall portion when in said open circuit position, said selector valve being orientated with respect to said housing to position the longitudinal axis of said handle in alignment with and extending toward said toggle when in said "closed" position, and latch means extending between and disengageably interlocking said handle and toggle against movement when in said "closed" and open circuit positions, respectively, said latch means including a bar pivotally mounted at one end on said valve handle to extend along said handle longitudinal axis when in said interlocking engagement and adapted to swing to an angular disengaged position, said bar having a block portion at the opposite free end formed with a transverse passageway into which said toggle extends in said interlocking engagement.

4,240,524

OIL FLOW CONTROL DEVICE FOR POWER TRANSMISSIONS

Nobuaki Katayama, and Hideaki Koga, both of Toyoto, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 29, 1978, Ser. No. 974,227
Claims priority, application Japan, Aug. 2, 1978, 53/106242[U]
Int. Cl.³ F01M *9/06*
U.S. Cl. 184—6.12 **8 Claims**



1. In a power transmission unit for a motor vehicle comprising:

a transmission casing shaped to conform with a change-speed gearing contained therein, said change-speed gearing including an output mainshaft rotatably supported from an upright end wall of said casing; and

an extension housing secured in a fluid-tight manner at its upright front seating face to said upright end wall to contain one end of said mainshaft extending therein from said upright end wall, said extension housing forming a lubricant chamber in open communication with the interior of said casing through the upper portion of said upright end wall;

the improvement wherein the bottom wall of said transmission casing is formed therein with a cavity opening toward said lubricant chamber and with a through hole across said cavity to open said lubricant chamber toward the interior of said casing and exterior therethrough; and a plug element is coupled with said through hole in a fluid-tight manner to close said through hole, whereby when said plug element is partly released outwardly, said lubricant chamber is communicated with the interior of said casing through said cavity and said through hole.

4,240,525
TOY TIMING DEVICE WITH A SLIP-STICK ESCAPEMENT-LIKE MECHANISM

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

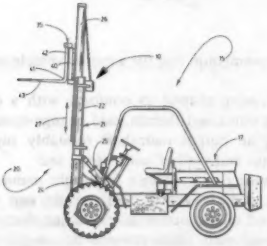
Division of Ser. No. 806,855, Jun. 15, 1977, Pat. No. 4,154,054.
This application Feb. 7, 1979, Ser. No. 9,939
Int. Cl.[2] F03G 1/04
U.S. Cl. 185—38 5 Claims

1. An escapement-like mechanism comprising:
a first member including a wall having a continuous surface;
a second member mounted on said first member to afford relative movement of said members between first and second relative positions, said second member including a projection which stays in closely spaced relationship along said surface during said relative movement;
means for biasing said members toward said first relative position; and
a length of elastic resilient material mounted on said second member in a position generally aligned in the direction of relative movement of the members, said length extending across and being unattached to the projection with part of the length of elastic material slightly compressed between the projection and said surface so that the elastic material will intermittently stick and slip against said surface to regulate movement of said members from said second position to said first position under the influence of said biasing means.

4,240,526
SAFETY DEVICE FOR FORKLIFTS AND THE LIKE

Gloria L. Sanders, 587 W. Westfield, Porterville, Calif. 93257

Filed Aug. 6, 1979, Ser. No. 64,004
Int. Cl.[3] B66B 9/20
U.S. Cl. 187—9 R 7 Claims

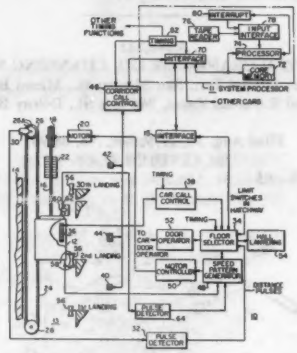


1. A safety device for use on a forklift or the like having a substantially vertical guide defining a path of travel, a carriage, means mounting the carriage for movement along the path of travel and a substantially horizontal cross member rigidly mounted on a portion of the forklift adjacent to the path of travel, and being at all times out of said path of travel the device comprising a mounting member having a slot having a dimension slightly larger than the cross member permitting fitted engagement with the cross member in supported, non-rotational relation; and a supporting member integral with and extending from said mounting member in an attitude such as to extend into said path of travel for engagement by the carriage when the mounting member is disposed in said fitted engagement.

4,240,527
ELEVATOR SYSTEM

James Vine, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 340,619, Mar. 12, 1973, abandoned.
This application May 15, 1974, Ser. No. 470,095
Int. Cl.[3] B66B 1/18
U.S. Cl. 187—29 R 23 Claims

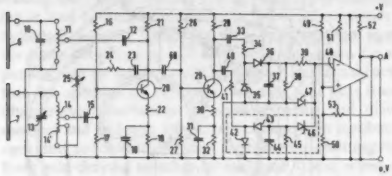


1. An elevator system comprising:
a structure having a plurality of landings,
elevator cars mounted for movement relative to the structure to serve the landings,
first call means for registering landing calls for elevator service from said plurality of landings, and providing serial call signals in response thereto,
second call means for registering car calls from said elevator cars,
control means associated with each of said elevator cars, each of saic control means controlling the operation of its associated car in response to control signals applied thereto, said control means providing serial data signals including signals indicating car position, travel and service direction and signals which indicate whether the car is in the process of serving a call,
a digital computer responsive to the serial signals of said first call means and to the serial data signals provided by the control means for each of said elevator cars, said digital computer including a memory and a program stored therein for allocating landing calls and assigning tasks to the elevator cars according to predetermined strategy, said digital computer providing serial control signals for said control means which signals control the operation of said elevator cars,
said program being divided into predetermined subsections,
first means indicating the need to run predetermined subsections of the program in response to the serial call signals provided by said first call means and the serial data signals provided by the control means of said elevator cars,
and second means serially running the subsections of the program which have a need to run, with their sequence being selected by said second means.

4,240,528
FIELD SENSOR

Hans Kraus, Rüsselheim, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 902,735
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2719955
Int. Cl.³ B66B *13/06*
U.S. Cl. 187—52 R 10 Claims

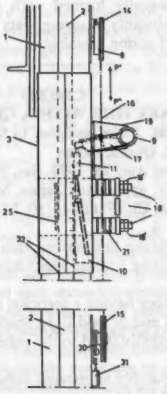


1. A field sensor control mechanism for detecting obstructions in front of the leading edges of linearly moving motor-operated sliding elevator doors, comprising at least two insulated electrodes mounted in a leading edge of a slidable door at different levels; means, including a first capacitor and a first inductor, forming a first oscillating circuit electrically connected to one of said electrodes; means, including a second capacitor and a second conductor, forming a second oscillating comparison circuit electrically connected to the other of said electrodes and having a base oscillating frequency at least substantially the same as that of said first circuit; and means including a feedback winding and an amplifier connected in circuit with said first and second circuits and operative for so coupling said first and second circuits that the oscillations of said first circuit vary as a function of capacitance changes in said electrodes.

4,240,529
VERTICAL CONVEYING APPARATUS

Peter Hagmann, Daeniken, and Lovro Markun, Suhr, both of Switzerland, assignors to Oehler-Whylen-Lagertechnik AG, Buchs bei Arrau, Switzerland

Filed Oct. 2, 1978, Ser. No. 948,097
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744986
Int. Cl.³ B66B *5/16*
U.S. Cl. 187—90 3 Claims



1. A vertical conveying apparatus with a lifting unit and an emergency braking system, which decelerates the speed of the lifting unit as soon as a preselected top speed is exceeded, comprising;

at least two vertically arranged guiding rails for the guiding of the movement of said lifting unit, each guiding rail having shoulders and a parallel wear strip along said shoulder;

at least two braking wedges arranged on both sides of said lifting unit for movement with said lifting unit, each wedge acting against one of said rails and each wedge being vertically displaceable relative to said lifting unit;

a lever mechanism connected to said braking wedges, said braking wedges being each floatingly suspended from lever mechanism and an endless rope drive;

an endless rope drive moving synchronously with said lifting unit constructed and arranged so that a decrease in the speed of the rope drive relative to the speed of the lifting unit causes a displacement of the braking wedges to decelerate stop the lifting unit;

supporting members for slideably receiving said wedges and to permit horizontal displacement of said wedges under wedging action;

said braking wedges instantaneously coacting in frictional full face engagement with its corresponding parallel wear strip at the shoulder of the vertical guide rail, said wedges being slideably received in said supporting member for adjustable pressing movement from gentle pressing to full force braking against said parallel wear strips;

a supporting block rigidly connected to said lifting unit;

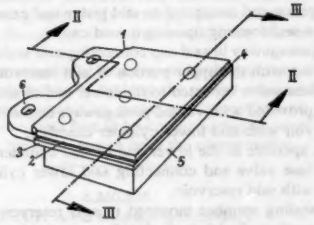
a plurality of bolts in parallel, each fitted with cup springs, washers and fasteners to secure said supporting members to said supporting block; and

said cup springs providing spring forces in opposition to the wedging forces of said braking wedges whereby the wedge pressure may be progressively increased from gentle breaking forces to full force braking.

4,240,530
BRAKE PAD FOR DISC BRAKES

Johannes Tillenburg, Essen, Fed. Rep. of Germany, assignor to Abex Pagid Reibbelag GmbH, Essen, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,360
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821194
Int. Cl.³ F16D *65/12*
U.S. Cl. 188—250 E 3 Claims



1. A brake pad for disc brakes, in particular disc brakes of motor vehicles, comprising a multi-part carrier plate and a friction lining pressed thereon, a damping layer being provided in each case between two parts of the carrier plate to separate the two parts and projections on one part of the carrier plate engaging with corresponding recesses in the other part of the carrier plate, characterized in that the parts of the carrier plate are provided with mating centering recesses and centering projections which mutually engage and have oblique centering surfaces, a slightly compressible thin, vibration-damping and heat-insulating elastic bonding layer is located between two parts of the carrier plate and the elastic bonding layer consists

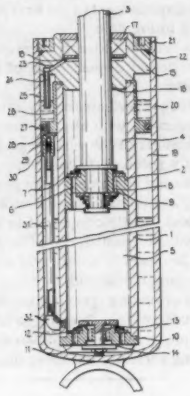
of a non-swellable material which is bonded to the parts of the carrier plate under pressure and at the temperature at which the friction lining is bonded to the carrier plate.

4,240,531

LOW-WEAR SHOCK ABSORBER

Pieter M. Postema, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 544
Int. Cl.³ F16F 9/00
U.S. Cl. 188—315 **2 Claims**



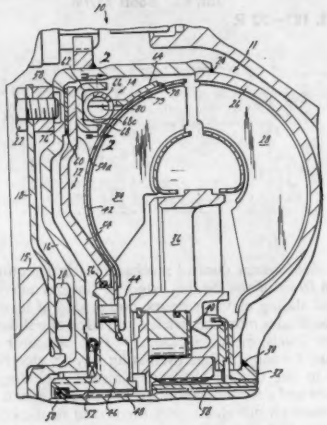
1. A shock absorber comprising, in combination:
a cylinder which is divided into upper and lower cylinder chambers by a piston slidably mounted therein;
a casing surrounding said cylinder coaxially therewith and forming a reservoir chamber between the outer wall of said cylinder and the inner wall of said casing, said casing being closed at the lower end thereof;
a cap enclosing the upper ends of said cylinder and said casing;
a piston rod connected to said piston and extending through a seal-forming opening in said cap;
a passageway in said cap connecting said seal-forming opening with the upper portion of said reservoir;
a base valve mounted to the lower end of said cylinder and provided with valved passageways connecting said reservoir with said lower cylinder chamber;
an aperture in the lower end of said cylinder adjacent said base valve and connecting said lower cylinder chamber with said reservoir;
a sealing member mounted in said reservoir at the upper portion of said shock absorber and dividing said reservoir into upper and lower reservoir chambers, said member having a passageway therein connecting said upper and lower reservoir chambers;
a pipe connected between said aperture and said passageway of said member for connecting said lower cylinder chamber with said upper reservoir chamber;
a damping medium in said cylinder and partially filling said upper and lower reservoir chambers; and,
a one-way valve mounted in the passageway provided by said pipe, said one-way valve permitting said damping medium to flow from said upper reservoir chamber and into said lower cylinder chamber.

4,240,532

TORSIONAL ISOLATOR FOR TORQUE CONVERTER LOCK-UP MECHANISM

Alfred P. Blomquist, Farmington Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 21, 1978, Ser. No. 944,459
Int. Cl.³ F16D 33/00, 3/14
U.S. Cl. 192—3.28 **13 Claims**



1. In an automatic power transmission for transmitting power from an engine to a drive train of the type having a torque converter with an impeller portion and a relatively rotatable turbine portion, an annular lock-up piston member mechanically lockingly engageable with one of the portions, and torsional isolating means for damping the motion transmitted from the engine through the piston member and the portions, an improvement wherein said torsional isolating means comprises:
A. a drive ring member;
B. first means for fixedly securing said drive ring member to said piston member;
C. a driven ring member;
D. second means for fixedly securing said driven ring member to one of said torque converter portions;
E. a plurality of spring members operatively engaged between said drive and driven ring members for damping vibratory relative motion therebetween; and
F. means integrally formed with said drive member for defining a plurality of spring seats for engaging one end of each of said spring members.

4,240,533

COASTER BRAKE HUB WITH A GEAR-TRANSMISSION

Seiji Fukui, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 28, 1978, Ser. No. 900,862
Claims priority, application Japan, May 6, 1977, 52/52284
Int. Cl.³ F16D 41/30; F16H 57/10
U.S. Cl. 192—6 A **3 Claims**

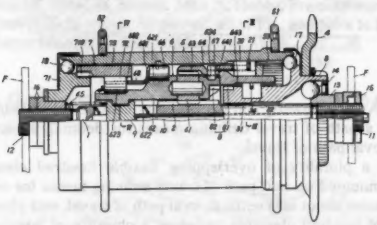
1. A coaster brake hub having therein a gear-transmission and a back-pedalling braking mechanism comprising:
a fixed shaft;
a driving member having a sprocket and rotatably supported to one axial end of said fixed shaft;
a brake cone rigidly fixed to the other axial end of said fixed shaft;
a hub shell rotatably supported between said driving member and said brake cone;
a multiple stage gear-transmission housed within said hub shell for changeably transmitting the forward driving

force from said driving member to said hub shell when said driving member rotates in a forward direction, said gear-transmission comprising a sun gear provided on said fixed shaft, a cylindrical gear frame including a plurality of planetary gears in mesh with said sun gear, a ring gear including inner teeth in mesh with said planetary gears, transmitting members provided between said gear frame and ring gear and the inner periphery of said hub shell and, means for selectively coupling the forward driving force from said driving member to one of said gear frame and ring gear;

a braking mechanism housed within said hub shell comprising at least two semi-cylindrical brake shoes, actuators for radially expanding said brake shoes pressing them against the inner periphery of said hub shell, and means for supporting said actuators to said gear frame so that said actuators are operated by reverse rotation of said gear frame;

a change-over mechanism inserted between said driving member and said gear frame, said change-over mechanism operating to forcibly intercept the force transmitting route from said driving member to said gear frame when said driving member is reversely rotated and to establish a force transmitting route from said driving member to said ring gear causing said gear frame to be reversely rotated by said ring gear, thus operating said actuators which press said brake shoes against the inner periphery of said hub shell;

said gear frame and ring gear being axially moveable and engaged together to axially move in unison, said gear frame and ring gear being selectively engaged with said driving member;



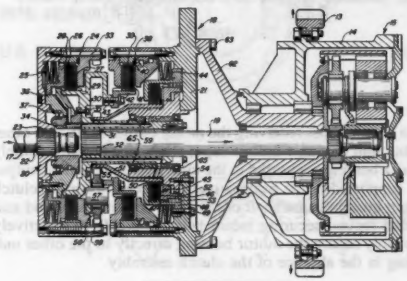
said driving member having a cylindrical extension extending within said hub shell, the extension being opposite at a substantially intermediate outer periphery thereof to the inner periphery of said ring gear and being opposite at the foremost end to said gear frame, said coaster brake hub further comprising a first transmitting means consisting of pawls and respective grooves engageable therewith provided between said intermediate portion of said extension and said opposite inner periphery of said ring gear for transmitting the forward driving force from said driving member to said ring gear, and a second transmitting means provided between the foremost end of said extension and the opposite face of said gear frame for transmitting the forward driving force from said driving member to said gear frame, said second transmitting means comprising prime cam means and subordinate cam means for engaging with said prime cam means, said prime and subordinate cam means having engaging faces respectively, said first transmitting means engaging grooves having an axial extent such that said pawls at the first transmitting means are disengaged from said engaging grooves when said prime cam means at said second transmitting means are engaged with said subordinate cam means thereof, said pawls being engaged with said engaging grooves after said prime cam means is relatively moved out of a range where said prime and subordinate cams are in driving engagement with each other, said first and second transmitting means being alternately operable, said second transmitting means including said change-over mechanism, said change-over mechanism, when said driving member is rotating reversely, forcibly moving said gear frame apart from said driving member so that the driving force from said driving member no longer passes through the second transmitting means but rather passes through the first transmitting means.

4,240,534

GEARED STEERING MEANS

Richard L. Hedgcock, and Gerald E. Whitehurst, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 26, 1979, Ser. No. 11,599
Int. Cl.³ F16D *67/02;* B60K *41/24*
U.S. Cl. 192—13 R **10 Claims**



1. A geared steering clutch mechanism (**18**) for selectively driving a rotary shaft input means (**17**), a rotatable hub (**30**), connecting means (**31,32**) drivingly connecting the hub to the output means, said clutch mechanism being arranged to provide selectively a high speed connection of the input and output means, a reduced speed connection of the input and output means, and a braked condition of the output means disconnected from the input means, said clutch mechanism comprising:

a first clutch (**24**) selectively operable to connect the input means through said hub to the output means to provide a high speed connection therebetween;

speed reduction gear means (**55,56,58**);

a second clutch (**45**) selectively operable to connect the input means to the output means through said speed reduction gear means and said hub to provide a reduced speed connection therebetween, said first and second clutches being selectively arrangeable concurrently to positively disconnect the input means from the output means; and

means (**38**) for selectively retaining said hub against rotation and as a result thereof braking the output means solely through said connecting means concurrently with the arrangement of said first and second clutches to positively disconnect the input means from the output means.

4,240,535

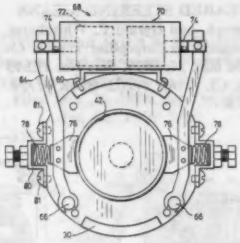
CLUTCH AND BRAKE ASSEMBLY

Robert B. Pierce, and Robert B. Wilson, both of Scarborough, Canada, assignors to BLM Automatic Clutch Limited, Scarborough, Canada

Filed May 1, 1978, Ser. No. 91,551
Int. Cl.³ F16D *67/06, 43/18*
U.S. Cl. 192—17 C **5 Claims**

1. In combination, an electric motor, a clutch assembly and another rotating unit, said electric motor having a housing, said clutch assembly having a housing, first means selectively detachably securing said motor housing to said clutch housing, said other rotating unit having a housing, second means selectively detachably securing said clutch housing to said unit housing, said clutch assembly having a drive body and a driven

body in said clutch housing, said drive body having radially movable centrifugal weights operable to engage and drive the driven body when the rotational speed of the drive body exceeds a predetermined value and to disengage from the driven body when the rotational speed of the drive body is below the predetermined value, said electric motor having an output shaft projecting from the motor housing, said drive body having an annular boss receiving the motor output shaft, said other rotating unit having a hollow input shaft, said clutch assembly having a bearing supported in the clutch housing and an output shaft supported in the bearing and projecting from the clutch housing into the input shaft of the other rotating unit, and said first and second securing means being operable to selectively detachably secure the motor housing directly to the other unit housing in the absence of the clutch assembly.



4,240,536

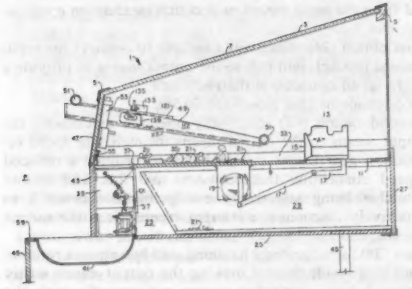
AMUSEMENT DEVICE

Robert E. Noell, Jr., 1799 Velma Dr., Largo, Fla. 33540

Filed Nov. 20, 1978, Ser. No. 962,363

Int. Cl.[3] G07F *1/04*

U.S. Cl. 194—1 K **28 Claims**



1. In an amusement device played with a coin or token which includes an enclosure having therein a platform of finite length for retaining therein a plurality of elements selected from prizes, coins, tokens or combinations thereof, a means for feeding a coin or token from a position outside said enclosure onto said platform, reciprocating blade means having a face which extends laterally across said platform for contacting said elements on said platform and at random times causing one or more of said elements to be ejected from an edge of said platform, means located proximal to said platform for catching said ejected elements, at least one of said means so proximally located also dispensing said ejected elements to a location accessible to a player positioned outside said enclosure; the improvement comprising in combination:

said means for feeding said coin or token onto said platform including an elongated chute located above said platform and extending a substantial distance across that portion of said platform on which said elements are located, said chute terminating in a discharge end located within a short distance from the nearest point of reciprocation of said face of the reciprocating blade means extending laterally across said platform, said chute being rotatable about a pivot connection located intermediate the ends of said chute and forming a finite angle other than 180° with said platform, said pivot connection being located forward of the said ejection edge of said platform and between the two planes defined by an extension of the lateral extremities of the face of the reciprocating blade means in the direction of reciprocation of said reciprocating blade means such that said chute may be rotated about its pivot connection so as to sweep the entire face of said reciprocating means and to be capable of being pivoted to a position parallel to said direction of reciprocation.

4,240,537

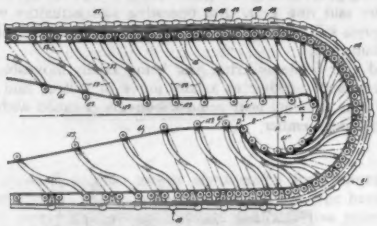
ACCELERATING AND DECELERATING HANDRAIL

Phillip E. Dunstan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 18, 1978, Ser. No. 897,263

Int. Cl.[3] B66B *9/12*

U.S. Cl. 198—334 **13 Claims**



1. An accelerating and decelerating handrail comprising:

(1) a path of travel defining means for defining a vertical, oval path of travel;

(2) a plurality of overlapping flexible handrail elements mounted on said path of travel defining means for movement about said vertical, oval path of travel, said plurality of handrail elements including a plurality of interleaved first and second handrail elements; and,

(3) overlapping control means for controlling the amount of overlap between adjacent elements of said plurality of handrail elements, said overlapping control means comprising:

(a) cam means mounted inside of said path of travel defining means for controlling the position of cam follower means associated with said plurality of handrail elements, said cam means comprising a cam rail that converges toward said vertical, oval path of travel in an acceleration zone wherein the amount of handrail element overlap decreases and diverges from said vertical, oval path of travel in a deceleration zone wherein the amount of handrail element overlap increases;

(b) cam follower means associated with said plurality of handrail elements and projecting inwardly from said path of travel defining means so as to contact and be adjustably positioned by said cam means, said cam follower means comprising a plurality of arms, one arm rotatably attached at one end to each of said plurality of first handrail elements, and a plurality of rollers, one roller rotatably mounted on the opposite end of each of said arms, said rollers riding on said cam rail and acting to rotate their associated arms with respect to their associated handrail elements;

(c) flexible connecting means running between pairs of adjacent handrail elements and operatively connected to said cam follower means, such that the position of said cam follower means controls the length of said flexible connecting means running between pairs of

adjacent handrail elements to thereby control the amount of handrail element overlap, said flexible connecting means comprising a plurality of first and second flexible members running between trios of adjacent handrail elements, each of said trios including two of said first handrail elements and one of said second handrail elements spaced between said two of said first handrail elements, one end of said first flexible member being affixed to one of said first handrail elements of said trios, and the other end of said first flexible member being affixed to said cam follower arm associated with said one of said first handrail elements, one end of said second flexible member being affixed to the same cam follower arm and the other end of said second flexible member being affixed to the other of said first handrail elements forming said trio, said flexible connecting means also including sheave means for coupling said first and second flexible members to said second handrail element of said trio in a manner such that when said arm associated with said one of said first handrail elements is rotated by its associated roller impinging on said cam rail, the length of said first and second flexible members running between said trio of handrail elements is varied whereby the amount of overlap between said trio of handrail elements is varied; and,

(d) drive means for moving said plurality of overlapping elements about said vertical, oval path of travel.

4,240,538

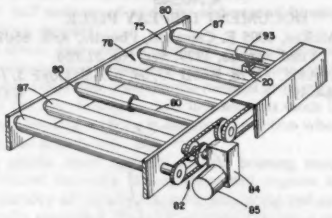
METHOD AND APPARATUS FOR ACCUMULATING AND GATING ARTICLES

Richard B. Hawkes, Easton; John N. Hobbs, Freemansburg, and Terry J. Schuerman, Allentown, all of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed Dec. 27, 1977, Ser. No. 864,235

Int. Cl.³ B65G *43/08, 47/46, 13/06*

U.S. Cl. 198—358 **3 Claims**



1. Apparatus for the controlled feeding of a stream of articles from an input line to an output line comprising conveyor means for receiving articles from said input line and for conveying said articles downstream toward said output line, means for driving said conveyor means, a gate for receiving articles from said conveyor means and gating said articles onto said output line, article restrictor means between said conveyor means and said gate, means for sensing the presence of an article at the entrance to said gate, means for sensing the presence of an article at said restrictor means, means for producing a control signal in response to the presence of articles at both said gate and said restrictor means, means responsive to said control signal for initiating the gating of an article to said output line and for causing said restrictor means to prevent the passage of succeeding articles to said gate during said gating operation, said conveyor means comprising a series of conveyor sections, said conveyor driving means comprising means for driving each of said sections independently, means associated with each of said conveyor sections for sensing an accumulation of articles on the adjacent downstream conveyor section and control means responsive to said accumulation sensing means for interrupting the driving of said adjacent conveyor section, each of said conveyor sections including a plurality of driven rollers upon which said articles are conveyed, each of said rollers comprising a shaft and a roller sleeve frictionally coupled to said shaft for rotation therewith, said sleeve being uncoupled from said shaft by a load of stalled articles, and said accumulation sensing means comprising a photodetector relay mounted below one of said rollers and a reflective strip carried by said roller sleeve, said relay sensing rotation or nonrotation of said strip.

4,240,539

BACKUP STATION FOR A CARTON FILLING MACHINE

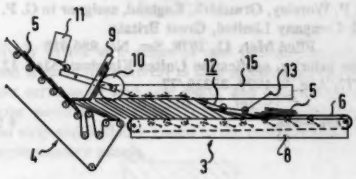
Hartmut Klapp, Kaarst, Fed. Rep. of Germany, assignor to Jagen-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,134

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825420

Int. Cl.³ B05B *1/30, 1/02*

U.S. Cl. 198—461 **7 Claims**



1. A backup station in a carton filling machine for guiding and loading premanufactured blanks into transport containers, arranged between an imbrication station and a delivery belt which includes a rotation station, the backup station comprising:

at least one support rail arranged in the direction of delivery of blanks for supporting said blanks; and

at least two conveyor belts running along said support rail, said conveyor belts being raised above the surface of said support rail during normal, non-backed up operation and being lowered by the backed-up blanks to the surface of said support rail in backed-up operation.

4,240,540

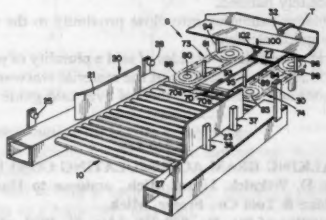
GATING METHOD AND APPARATUS

John N. Hobbs, Freemansburg, and Richard B. Hawkes, Easton, both of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed Dec. 27, 1977, Ser. No. 864,234

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—492 **6 Claims**



1. Apparatus for gating articles from a supply line to an output line, said apparatus comprising a conveyor interposed between said supply line and said output line, a pair of gating pins, pin mounting means mounting said gating pins for successive movement adjacent said conveyor in a path parallel thereto, means for cyclically driving said pin mounting means

so as to move said gating pins successively along said path parallel to said conveyor, means for driving said conveyor at a speed lower than that of said pin mounting means, said pin mounting means being adapted to position said pair of gating pins in a first position with a first of said gating pins at rest at the entrance to said conveyor to block movement of an article onto said conveyor, and the second of said gating pins being spaced along said pin mounting means from the first of said gating pins such that said first gating pin releases from and moves away from the article and said second gating pin at its speed of travel with said pin mounting means overtakes the article on said conveyor released by movement of said first pin and pushes said article onto said output line, said pin mounting means being further driven in each cycle to thereafter move said pair of gating pins to said first position with said first gating pin blocking a succeeding article to be gated from the supply line to the output line.

4,240,541

APPARATUS FOR MOVING MATERIALS

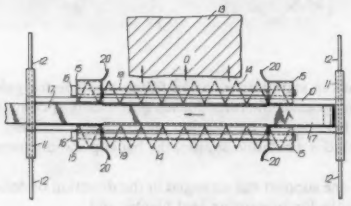
Gilbert P. Worsley, Ormskirk, England, assignor to G. P. Worsley & Company Limited, Great Britain

Filed Mar. 13, 1978, Ser. No. 886,018

Claims priority, application United Kingdom, Mar. 12, 1977, 10572/77; Aug. 9, 1977, 33229/77

Int. Cl.³ B65G *65/16*

U.S. Cl. 198—518 **4 Claims**



1. Apparatus for transferring material from a stockpile of such material at one location to another location comprising:

a frame movable in one direction toward the stockpile,

a guide plate secured to said frame with its surface extending downwardly and forwardly from said end for entering the stockpile,

shaft means carried by said frame at its forward end and rotatable about an axis transverse to said direction and spaced upwardly from said guide plate,

a plurality of blades secured to and spaced along said shaft means,

said blades each having the form of a part-turn of a helix with adjacent blades being substantially angularly displaced and the adjacent blades of a plurality of pairs being oppositely handed,

said blades extending into close proximity to the surface of the guide element,

whereby the adjacent blades of said a plurality of pairs are to produce side-to swilling of the material rearwardly of the blades and assist lifting thereof over said guide plate.

4,240,542

WALKING BEAM ACCUMULATING CONVEYOR

Douglas D. Wiknich, Utica, Mich., assignor to Harry Major Machine & Tool Co., Fraser, Mich.

Continuation of Ser. No. 889,210, Mar. 23, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,217

Int. Cl.³ B65G *25/00*; B63G *43/08*

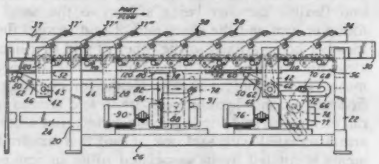
U.S. Cl. 198—751 **7 Claims**

1. In a walking beam type accumulating conveyor having a plurality of longitudinally spaced apart work stations:

transfer bars supported for movement beneath the stations through a cylce of operations wherein from a starting position the bars are first elevated, then moved longitudinally of the stations a distance corresponding to the space between the stations, then lowered and finally returning longitudinally in the opposite direction to the starting position;

carriers pivotally mounted on the transfer bars and swingable between idle and feed positions and operable in feed positions to transfer workpieces from station to station;

carrier shifting means joined to the carriers and supported on the transfer bars;



sensing means at each station in the path of the carrier shifting means during elevation of transfer bar when there is no workpiece at the station but out of the path of the carrier shifting means when there is a workpiece at the station, and

said carrier shifting means co-responsive to the elevation of the transfer bars and abutment with the sensing means to shift all carriers upstream from any empty station from idle to feed position during such elevation of the bars.

4,240,543

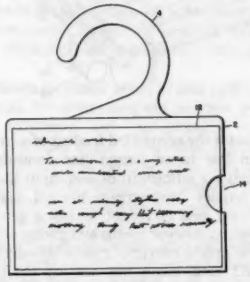
DOCUMENT DISPLAY PIECE

Phyllis L. McKee, 4005 E. Campbell, Phoeniz, Ariz. 85018

Filed Apr. 23, 1979, Ser. No. 32,136

Int. Cl.³ A45C *11/18*; B65D *75/04, 65/02*; G09F *3/18*

U.S. Cl. 206—39 **6 Claims**



1. A document holder, comprising:

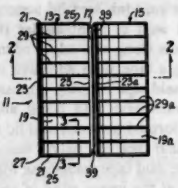
first and second substantially parallel plates at least one of which is transparent for receiving a rectangular document therebetween, said first and second plates being biased against each other, rigid and joined only at a lower end thereof for supporting said document, said first plate being a transparent front plate and said second plate being a rear plate; and

suspension means comprising a hook formed integrally with an upper end of said rear plate and extending therefrom for suspending said document and said first and second plates.

4,240,544
COIN HOLDER

Kenneth O. Barnhart, 13231 Flower, Garden Grove, Calif. 92640; Lawrence H. Morita, 20212 Big Bend Lane, Huntington Beach, Calif. 92646, and Rube I. Rubell, 4051 Manzanita, Irvine, Calif. 92714

Filed Apr. 6, 1979, Ser. No. 27,619
Int. Cl.³ B65D 85/00
U.S. Cl. 206—0.82 7 Claims



1. A coin holder for a stack of coins of predetermined diameter and predetermined thickness, said coin holder comprising:

first and second housing sections of plastic sheet material, each of said housing sections having opposite longitudinal edges, each of said housing sections including an essentially cylindrical half section;

hinge means for hingedly joining said housing sections together along one of said opposite edges of each of said housing sections whereby said housing sections can be hingedly moved between open and closed positions, said half sections cooperating in said closed position to define a coin receiving space, said coin holder being adapted to receive the coins of predetermined diameter when said housing sections are in said open position;

at least one of said housing sections including end wall means for essentially blocking movement of the coins out of the ends of the coin holder at least when the housing sections are in said closed position;

said half sections of said first and second housing sections being resilient;

the inside diameters of said half sections of said first and second housing sections being less than said predetermined diameter whereby the resilient gripping of the coins in the coin holder by said half sections tends to maintain said housing sections in the closed position when coins are in the coin holder; and

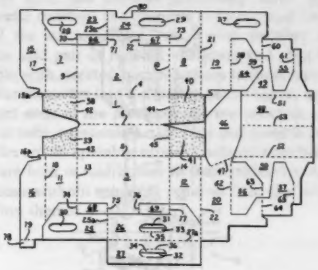
the plastic sheet material of said housing sections being formed inwardly at predetermined regions to define a plurality of radially inwardly projecting and circumferentially extending ribs with adjacent ribs being spaced apart in even multiples of said predetermined thickness, each adjacent pair of said ribs being adapted to have a predetermined number of the coins therebetween.

4,240,545
ARTICLE CARRIER

James T. Stout, Acworth, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 1, 1979, Ser. No. 80,262
Int. Cl.³ B65D 75/00
U.S. Cl. 206—188 9 Claims

1. An article carrier comprising a bottom panel (1), a pair of side walls (2,3) foldably joined respectively to the side edges of said bottom panel, end wall panels (7,8,11,12) foldably joined respectively to the end edges of said side walls and extending inwardly of the carrier, a pair of medial panels (19,20) foldably joined respectively to the inner edges of said end wall panels at one end of the carrier and extending medially inward of the carrier, a pair of riser panels (15,16) foldably joined respectively to the inner edges of said end wall panels at the other end of the carrier and extending medially inward of the carrier, a multiple ply handle (23,24,25,26,27) secured to said medial panels and said riser panels, a transverse partition strip (66,67,68,69) joined at one end thereof to one of said side walls and at the other end thereof to said handle and extending therebetween, a bottom reinforcement panel (48) disposed in flat face contacting relation with the upper surface of said bottom panel, a pair of supplementary panels (49,50) joined

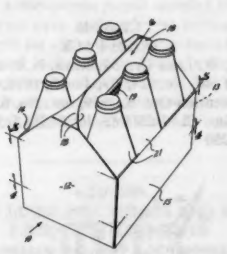


respectively to the side edges of said bottom reinforcement panel and secured respectively in face contacting relation with the inner surfaces of said side walls, and characterized by a transverse partition (54,55,56,57) secured to said transverse partition strip and foldably joined to the corresponding one of said supplementary panels.

4,240,546
BASKET-TYPE CARRIER FOR BOTTLES AND METHOD OF FORMING THE SAME

Orison W. Stone, New Haven, Vt., assignor to Pack Image, Inc., Middlebury, Vt.

Filed Jun. 27, 1979, Ser. No. 52,491
Int. Cl.³ B65D 5/24, 5/46, 5/48, 85/62
U.S. Cl. 206—193 18 Claims



1. A basket carrier for bottles comprising,

four panels initially forming a tube having top, bottom and end walls,

the top wall having at each of its four corners a gusset connection to a respective end wall,

said top wall and gussets being folded inwardly along a central fold line to form a two-ply center partition,

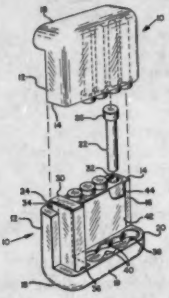
said end walls having minor flaps folded inwardly and said bottom wall having major flaps folded upwardly to form side walls spaced from said center partition, thereby providing pockets on both sides of said center partition for the receipt of bottles.

4,240,547

SPECIMEN MAILER

Billy W. Taylor, 410 Raymondale, Apt. #3, South Pasadena, Calif. 91100

Filed Nov. 27, 1978, Ser. No. 963,931
Int. Cl.³ B65D 77/22, 81/16, 85/42
U.S. Cl. 206—204 7 Claims



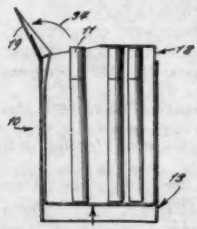
1. A reusable package for safely shipping fragile, elongate specimen containers, said package comprising: two L-shaped, matable parts of substantially identical size and shape, each said part having a long leg with a free end and an inside face, and a short leg with a free end and an inside face; the long leg and the short leg of each said part being joined together perpendicularly at ends thereof opposite said respective free ends, the long leg including means defining an elongate, laterally-enclosed aperture therein extending from an opening of said aperture in the free end of said long leg toward the corresponding short leg thereof for receiving a specimen container; the short leg of each said part including means defining a cavity therein and an opening of said cavity in the inside face of said short leg for receiving an end of a specimen container; the inside face of the short leg of one part being disposed adjacent the free end of the long leg of the other part and the end opening of the elongate, laterally-enclosed aperture in said other part opening into the opening of the cavity in said one part when said two parts are mated, such that a specimen container disposed within said elongate laterally-enclosed aperture of either part is completely enclosed by said package.

4,240,548

PUSH PACK

Joseph B. Stio, W. Lake Dr., Montauk, N.Y. 11954

Continuation of Ser. No. 914,079, Jun. 9, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,100
Int. Cl.³ B65H 85/10; B65D 5/32
U.S. Cl. 206—250 1 Claim



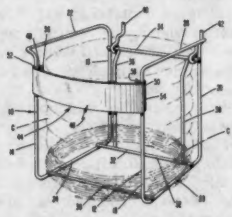
1. A push pack for cigarettes or the like, comprising in combination, a rectangular box-like carton made of folded, bendable paper around a quantity of enclosed cigarettes or the like, and a tubular sleeve in which said carton is slidable, said carton having an upwardly pivotable lid at one upper end corner thereof for access into said carton, and a mechanism for opening and closing said lid automatically when said carton is slid back and forth inside said sleeve, said lid being formed by an angular slit on each opposite side wall of said carton and an interconnecting slit across a top of said carton connecting upper ends of said angular slits, while a fold line spaced below the top edge lying transversely across an end wall of said carton intersects lower ends of said angular slits and forms a movable pivot for said lid; said lid accordingly comprising a top wall, an end wall at right angles thereto and opposite triangular side walls along side edges of said lid top, and pivot means comprising a tape with adhesive on one side, a transverse fold across said tape forming opposite end halves of said tape, said tape transverse fold being aligned adjacent to a corner of said lid formed between said lid top wall and said lid end wall, one of said tape end halves being adhered to an end wall of said sleeve, said tape transverse fold forming a stationary pivot located at the upper edge of said lid side wall, said pivot means acting as a hinge means for pivotally connecting the lid at the top edge of its end wall to the top edge of the sleeve end wall and for preventing sliding movement of the lid with respect to the sleeve, whereby upward sliding movement of the carton within the sleeve causes a buckling of the end wall of the carton whereby the movable pivot follows an arcuate path about said stationary pivot to thereby snap open said lid.

4,240,549

DISPLAY CONTAINER FOR COILED WIRE

James W. Hogg, Nashville, Tenn., assignor to Anchor Wire Corporation, Goodlettsville, Tenn.

Filed Jul. 20, 1979, Ser. No. 59,390
Int. Cl.³ B65D 85/04
U.S. Cl. 206—303 4 Claims



1. A display and dispensing container for coiled wire bundles comprising: a pair of wire side members having generally rectangular configuration defining the sides of said container and oriented generally parallel to each other; spaced front and rear wire lower cross members attached to and interconnecting the lower portions of said side members, the distance between said lower cross members and the distance between the vertical front portions of said pair of side members being less than the outer diameter of the coiled wire bundles; at least one upper cross member attached to and interconnecting the upper rear portions of said side members; the distance between the upper horizontal portions at a medial point at least being equal to the outer diameter of the coiled wire bundles to permit their removal; and at least two hook means attached to said upper cross member to enable the container to be hung on a peg board or like surface, each said hook means being vertically pivotal and adapted to be spaced from the outer said hook means and means to horizontally confine the wire bundles within the rack.

4,240,550

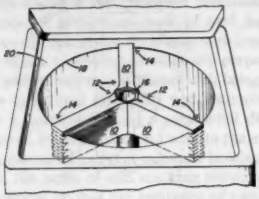
WASHING MACHINE AGITATOR BRACE

Herbert S. Collin, 35 Stillings St., Boston, Mass. 02210

Filed Dec. 20, 1979, Ser. No. 105,633

Int. Cl.³ B65D *81/06, 85/00*

U.S. Cl. 206—320 **3 Claims**



1. A bracing device for a top loading clothes washing machine having an agitator element comprising:

an elongate member formed from a relatively stiff but resiliently compressable foam plastic material, said member having an inner end and an outer end, said inner end being adapted to engage said agitator and the outer end being adapted to engage the rim of the opening of the washing machine so that when the brace is used it extends radially and outwardly from the agitator;

the inner end of the block being formed to define a vertically extending V-shaped groove adapted to engage the upper end of the agitator;

the outer end of the block being formed to define a plurality of horizontally extending vertically spaced V-shaped grooves adapted to engage the rim of the housing of the washing machine.

4,240,551

MAGNETIC TAPE CASSETTE HOLDER

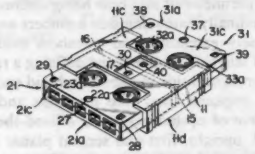
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,798

Claims priority, application Japan, Mar. 11, 1977, 52-29953[U]; Mar. 15, 1977, 52-31648[U]; Mar. 15, 1977, 52-31649[U]

Int. Cl.³ B65D *85/672*

U.S. Cl. 206—387 **2 Claims**



1. In combination, a pair of magnetic tape microcassettes and a magnetic tape cassette holder for receiving a pair of said tape microcassettes and for holding the tape microcassettes in their respective operable conditions without requiring removal from the holder;

each tape microcassette including:

a pair of tape hubs exposed outside the holder, a capstan insertion hole extending therethrough, cassette positioning holes formed at one surface thereof, a magnetic tape fixed at its ends to the hubs and adapted to run between the hubs, an open front end exposing the magnetic tape and a closed rear end opposite the front end; and

said magnetic cassette holder comprising:

a one-piece molded synthetic resin body having a pair of cassette receiving and holding chambers located adjacent each other in the same plane, said body having upper and lower panels which are dished toward each other and forming upper and lower surfaces of said chambers, said dished panels being adapted to elastically hold microcassettes therebetween, each chamber having an opening through which a respective microcassette is inserted, the microcassettes being received in their respective chambers in rear end-to-rear end relationship in the same plane, between said dished panels, said chambers further having at least one cutout for permitting all of the hubs, capstan insertion hole, and cassette positioning holes of a microcassette received in a chamber to be exposed for operation of the microcassette, and a stop member located between said pair of holding chambers and which is engageable with inserted microcassettes to limit insertion of said microcassettes into a chamber of the holder such that the front ends of the mirocassettes are operably exposed and said hubs, capstan insertion hole and cassette positioning holes are all operably exposed, whereby the microcassettes are held in said holder in their respective operable conditions without requiring removal from the holder for operation thereof.

4,240,552

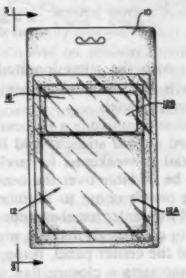
DISPLAY PACKAGE

James W. Brown, Los Angeles, Calif., assignor to C. R. Laurence Co., Inc., Los Angeles, Calif.

Filed Mar. 12, 1979, Ser. No. 19,339

Int. Cl.³ B65D *65/16, 75/58*

U.S. Cl. 206—459 **3 Claims**



1. A display package comprising: a card forming a backing for the package, a transparent plastic member mounted on the card to form an enclosure, said enclosure having a first section of substantial depth for containing the products to be displayed by the package, and said enclosure having a second section of minimal depth positioned adjacent to said first section; and an insert contained in said second section, said insert having indicia thereon describing the contents of the first section of the enclosure.

4,240,553

FOLDING LINER FOR SHIRTS AND SIMILAR PACKAGED GARMENTS

Leo Leopold, Austrasse 65, 7140 Ludwigsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 777,519, Mar. 14, 1977, Pat. No. 4,116,335. This application Apr. 4, 1978, Ser. No. 893,540

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2714977

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.³ B65D *73/00*

U.S. Cl. 206—492 **9 Claims**

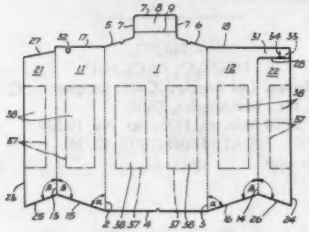
1. A folding liner designed for assembly with a man's shirt, woman's blouse, pajamas, or a similar foldable garment in a folding operation which produces a self-contained compact

package for storage, shipment and retail sales display, the folding liner comprising in combination:

an elongated, approximately rectangular center panel of a width and length which correspond substantially to the width and length of the intended package, the center panel having a top side intended to engage the shoulder portion of the garment, an oppositely located bottom side, and two substantially parallel straight longitudinal sides;

two elongated, likewise approximately rectangular inner wing panels with top and bottom sides and substantially parallel inner and outer longitudinal sides, their inner longitudinal sides forming integral junctions and lateral fold lines with the longitudinal sides of the center panel, the width of the inner wing panels being slightly less than one-half the width of the center panel; and

two elongated, likewise approximately rectangular outer wing panels with top and bottom sides and substantially parallel inner and outer longitudinal sides, their inner longitudinal sides forming integral junctions and intermediate fold lines with the outer longitudinal sides of the inner wing panels, the outer wing panels being narrower than the inner wing panels;



the folding lines thus comprising a succession of five panels which are joined at four straight fold lines along which the liner material is weakened by perforations, for the wing panels to be foldable over the center panel, so that the outer wing panels come to lie inbetween the inner wing panels and the center panel and coextensive layers of said garment are clampingly held in place between said wing panels and the center panel, respectively; and

closure means comprising a closure flap in the form of an integral lateral extension on the top side of one of the two inner wing panels and a closure notch on the top side of the other inner wing panel, so arranged that it is engageable by the closure flap, after the wing panels have been folded over the center panel, thereby creating a locking action which secures the folding liner in the folded state, thus maintaining said clamping action.

4,240,554

NESTABLE CONTAINER

Erik Bock, Kirke Hyllinge, Denmark, assignor to Superfos Emballage A/S, Vipperød, Denmark

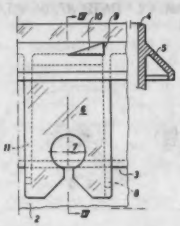
Filed Aug. 9, 1979, Ser. No. 65,088

Claims priority, application Denmark, Aug. 24, 1978, 3735/78

Int. Cl.³ B65D *21/02*

U.S. Cl. 206—519 **6 Claims**

1. In a container of the type having a peripheral wall and a generally circular upper rim thereof defining an open container with a configuration disposed to receive a similar container in releaseable nested engagement therewith, the improvement which comprises a pair of wedge members on the container and adjacent said upper rim, said wedge members having each an abutment surface extending outwardly with respect to said wall and a guide surface inclined with respect to said abutment surface; and at least one locking member connected to said wall and extending outwardly therefrom, said locking member being positioned in relation to said wedge members such that when one container is in nested engagement with another similar underlying container, the locking member on said one container, in response to a relative rotation of said containers, will engage and ride upon the guide surface of a corresponding



wedge member of the underlying container until said locking member comes into engagement with the abutment surface of such wedge member to secure said containers in a relative angular position established thereby.

4,240,555

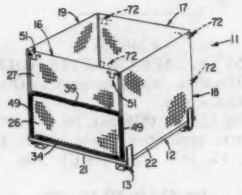
COLLAPSIBLE MATERIAL HANDLING CONTAINER

Stanley J. Jurasek, Concord Township, Jackson County, Mich., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Continuation of Ser. No. 817,989, Jul. 22, 1977, abandoned, which is a division of Ser. No. 582,780, Jun. 2, 1975, Pat. No. 4,050,606. This application Dec. 22, 1978, Ser. No. 972,424

Int. Cl.³ B65D *21/02, 19/10*

U.S. Cl. 206—511 **1 Claim**



1. A collapsible material handling container comprising: a substantially rectangular, horizontal and planar base defining a bottom wall, the perimeter of said base being defined by a pair of parallel longitudinally extending side members and a pair of parallel transversely extending end members extending between the ends of said side members and defining a rectangular planar frame wherein said side members and said end members are substantially coplanar, said side members and said end members being free of upstanding walls affixed thereto; substantially parallel, upright, first and second planar side walls whose lower ends are adapted to rest on said side members of said frame; substantially parallel, upright, first and second planar end walls whose lower ends are adapted to rest on said end members of said frame, whereby said side walls and said end walls define a box-like structure when the container is in an erected condition; releasable latch means for holding said side walls and said end walls in said erected condition; first and second horizontal hinge means connecting the lower ends of said side walls to said base for hinging movement about respective first and second horizontal axes lying substantially in the plane of said frame, third and fourth vertical hinge means connecting said end walls to at least one of said side walls for hinging movement about respective third and fourth vertical hinge axes so that said side walls and said end walls can be folded into substantially flat superimposed relation on said base in the collapsed condition of said container; four rigid support legs immovably fixedly secured to said end members of said frame adjacent to the corners of said frame, said support legs comprising corresponding foot portions which project down-

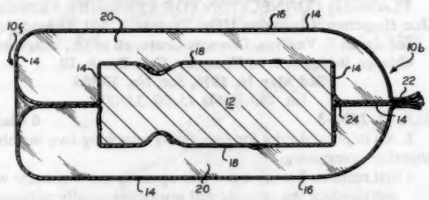
wardly from said frame and corresponding stacking portions which project upwardly above said frame a distance substantially greater than the combined thicknesses of said side walls and said end walls so that the upper ends of said stacking portions are located above the said side walls and said end walls when same are in overlying, substantially parallel relationship to said frame in the collapsed condition of the container, the stacking portion of each of said legs consisting essentially of an upright generally planar web located adjacent the outer side of and extending substantially perpendicularly to its associated end member, said planar web being located outwardly of its associated end wall and extending vertically therealong to a position located a substantial distance above the lower edge of its associated end wall in the erected condition of said container to prevent outward bowing of its associated end wall, the webs of said stacking portions of said four legs being arranged so that the entireties of two of said webs are along one end member of said frame and outside one of said end walls and the entireties of said other two webs are along the opposite end member of said frame and outside the other of said end walls so that said end walls cannot be swung outwardly, the side members of said frame being free of said webs so as not to interfere with outward swinging of said side walls, said webs being spaced from the corners of said frame and the upper ends of said webs being positioned a substantial distance above the side and end walls when same are positioned in substantially parallel relationship to said base in the collapsed condition of the container, each of said webs having an elongated notch extending along the upper edge thereof and having upstanding stop portions at the opposite ends of the notch, the foot portion of each of the legs having a horizontally extending stacking wall underlying and secured directly to the lower edge of its associated stacking portion, said stacking wall being of lesser width than the notch of its associated stacking portion so that it can be received in the notch in the web of a like container for stacking purposes in the collapsed condition of the container and so that it can rest on the upper edge of an end wall of a like erected container, and a downwardly extending flange at the outer end of said stacking wall and offset horizontally outwardly from said web.

4,240,556

INFLATABLE PACKAGE AND METHOD OF MANUFACTURE

Andrew S. Field, 300 West 12 Street, New York, N.Y. 10014

Filed Feb. 23, 1978, Ser. No. 880,699
Int. Cl.³ B65D *81/14, 81/20*
U.S. Cl. 206—522 **5 Claims**



1. An inflatable package comprising:

a flexible re-entrant cylindrical membrane having a radially outboard portion and a radially inboard portion extending longitudinally within said outboard portion, said inboard and outboard portions defining a substantially annular chamber between said outboard portion and said inboard portion, said annular chamber being sealed from the ambient atmosphere, said package having a deflated state and an inflated state,

said package when in said deflated state having an open mouth at a first end thereof to permit insertion of an object into the space radially inward of said inboard portion of said membrane,

said membrane providing a continuous surface from said outboard portion through said mouth to said inboard portion,

inflation of said annular chamber causing said inboard portion to collapse in a direction away from said outboard portion tending to conform said inboard portion around whatever object is within said space, inflation also causing said mouth to at least partially close in all radial directions, inflation also causing an automatic adjustment of the portion of said membrane constituting said inboard portion and said outboard portion,

said package when in said inflated state having a longitudinal distance substantially greater than a radial dimension of said outboard portion, and when inflated holding whatever object is within said space in a substantially radially centered position surrounded by said annular chamber to provide an air cushion around the object.

4. The method of manufacturing an inflatable package comprising:

selecting a tubular section of flexible material having first and second open ends and having a substantially constant diameter, said section having an axial length substantially greater than twice its diameter,

folding said first open end radially inwardly and bringing said first open end axially through the tubular body into juxtaposition with said second open end, and

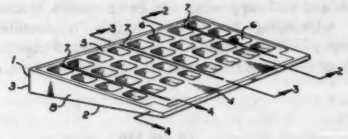
sealing said first and second open ends to one another to provide a substantially annular sealed chamber having an inboard portion and an outboard portion, whereby said constant diameter permits automatic adjustment of the portion of said material constituting said inboard portion and said outboard portion upon inflation of said chamber.

4,240,557

POLYSTYRENE FOAM STRUCTURE

Luther I. Dickens, Radford, Va., assignor to The Mead Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 698,966, Jun. 23, 1976, Pat. No. 4,144,296. This application Dec. 28, 1978, Ser. No. 973,914
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—153 **6 Claims**



1. A molded merchandise support constructed from polystyrene foam having a flat top, a thick edge, a thin edge, two sides interconnecting the two edges, and a bottom, said flat top and thick edge having at least a substantial portion of the surface covered by a protective covering bonded to the polystyrene foam, said support having a plurality of ribs for reinforcing the support in spaced relationship to each other, each rib having a depth at least equal to a major portion of the distance between the top and bottom and having a length so as to traverse at least a major portion of the distance between the thick and thin edges, each rib having at least one transfer hole filled with polystyrene foam, said transfer holes permitting the polystyrene to be transferred throughout the support during molding so the density of the support is fairly uniform.

4,240,558

SELF-PROPELLED CRANE WITH A TELESCOPIC BOOM AND ADDITIONAL BOOM MEANS

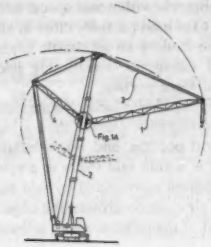
Eelis J. Mustonen, Kivelläntie 5, Kuopio, Finland

Continuation of Ser. No. 703,774, Jul. 9, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,960

Claims priority, application Finland, Jul. 15, 1975, 752038; Feb. 16, 1976, 760375

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—175 **2 Claims**



1. A self-propelled telescopic boom-type crane having a plurality of telescoping segments forming a telescopic boom pivotally mounted on a self propelled base a secondary boom having an outer and an inner end, the inner end of said secondary boom being pivotally mounted on a mounting element, said mounting element being mounted on and in longitudinal sliding relationship with respect to one of the telescoping segments of said telescopic boom, said mounting element being spaced below the top of the telescopic boom, a supporting arm having an inner and an outer end, the inner end thereof being mounted in longitudinal sliding relationship with respect to one of the telescoping segments of said telescopic boom, said supporting arm also being pivotally mounted with respect to said telescopic boom, said secondary boom and said supporting arm extending in opposite directions from the telescopic boom and being pivotally and longitudinally movable with respect to all of said segments of the telescopic boom during operation of the crane, supporting wire means for the secondary boom and the supporting arm supported on the top of the topmost segment of the telescopic boom and extending therefrom to the outer end of the secondary boom in one direction and to the outer end of the supporting arm in the oposite direction and therefrom to controllable winding means on the frame, and said secondary boom and said supporting arm being readily removable from said telescoping boom and readily reassembled thereto whereby said telescopic boom may be used together with or without the secondary boom and the supporting arm.

4,240,559

PROTECTIVE DEVICE FOR CAR COUPLER

Harry W. Nicholson, R.D. #4, Box 283, Rte. 66S, Apollo, Pa. 15613

Filed Apr. 18, 1979, Ser. No. 28,692

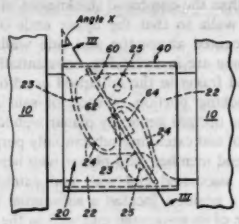
Int. Cl.³ B61G *7/14*

U.S. Cl. 213—1 R **4 Claims**

1. A protective device for a car coupler of the type such as used on railroad cars, the coupler having two members the ends of which have a generally C-shaped configuration and which engage each other for purposes of adding and towing a car, the protective shield comprising:

(a) a cover member designed to be placed over said coupler and adapted to prevent foreign materials from depositing on the members of the coupler and impeding operation thereof; and

(b) a clamping means rotatably attached to said cover, said clamping means designed to fixedly engage at least one of



the members of said coupler for purposes of maintaining said cover member over the coupler.

4,240,560

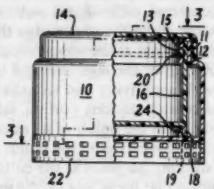
COSMETIC JAR

John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Jul. 13, 1979, Ser. No. 57,299

Int. Cl.³ B65D *8/06*

U.S. Cl. 215—12 R **4 Claims**



1. A three-part cosmetic jar comprising an outer jar having one and other open ends, the one open end of the outer jar terminating in a double wall construction, the outer wall of which has threads formed thereon for receiving a removable cap, an inner jar of generally cylindrical shape having one open end and one closed end, the open end of which terminates in a wall which is frictionally received within the inner and outer walls of the open end of the outer jar, and a decorative base secured to the one closed end of the inner jar and abutting against the other open end of the outer jar.

4,240,561

FLANGED CONNECTION FOR PRESSURE VESSEL

Jon Hagstrom, Clarendon Hills; Thomas J. Ahl, Orland Park, and James S. Vasilion, Downers Grove, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 16, 1979, Ser. No. 39,506

Int. Cl.³ B65D *45/00, 53/00*

U.S. Cl. 220—3 **6 Claims**

1. An improved joint for removably attaching two members together comprising:

a first member having a circular opening and a circular wall surrounding the opening and projecting axially outwardly from the opening

a double curved second member with a circular periphery having an annular flange with an inner surface surrounding the first member wall,

an adjustable spacer for transmitting radial forces from the second member annular flange to the first member wall, and

means at the joint for removably securing the first and second members together.

5. In a pressure vessel having a double curved walled body with an opening and a double curved closure for the opening

of the walled body securable in place by shear studs, the joint improvement comprising:

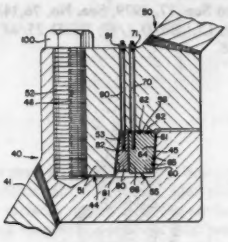
a circular trough in the walled body surrounding the opening defined by a pair of spaced apart inner and outer walls, with said inner wall being sloped,

said closure having an annular flange with an outer peripheral surface adjoining and complementary to the trough outer wall,

said closure annular flange having an inner sloped wall spaced from the trough inner wall thereby defining a sealing apparatus space,

a sealing ring in the sealing apparatus space,

said sealing ring having a top surface adapted to closely approach an inner surface of the closure with a gasket



therebetween, and also having a sloped inner surface adapted to closely approach the trough inner wall with a gasket therebetween,

means extending through the closure adapted to displace the ring in an axial direction to effect sealing by applying pressure to said gaskets,

a plurality of arcuate wedges, with outer sloped surfaces complementary to the closure flange sloped inner surface, between the sealing ring outer surface and the flange inner surface, and

means extending through the closure adapted to displace the arcuate wedges axially of, and independently of, the ring and into contact with the ring outer surface and the closure flange sloped inner surface.

4,240,562

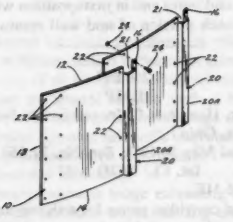
GRAIN STORAGE BIN WALL PANEL

Richard C. Holschlag, R.R. 2, New Hampton, Iowa 50659

Filed Apr. 2, 1979, Ser. No. 25,780

Int. Cl.³ B65D *6/32, 6/38, 8/12, 8/22*

U.S. Cl. 220—5 R **6 Claims**



1. A grain storage bin or the like, comprising,

a horizontal floor means,

a cylindrical wall means having inside and outside surfaces on said floor means,

said wall means comprising a plurality of sheet members of generally rectangular configuration having top, bottom, and first and second vertical side edges,

a vertical corrugation formed in each sheet member adjacent said first sides edge thereof to form a vertical brace,

the remainder of each of said sheet members being substantially smooth except for said corrugation,

the vertical brace of each sheet member being superimposed over and outside the second side edge of the laterally adjacent sheet member to place said brace on the outside surface of said wall means, said second side edge completely spanning said corrugation of the laterally adjacent sheet member to create a substantially smooth surface at the inner surface of said wall means,

fastener means for securing each sheet member to the second side edge of the laterally adjacent sheet member, said fastener means being arranged adjacent said vertical brace on opposite lateral sides thereof and vertically positioned from adjacent said top edge to adjacent said bottom edge of each sheet member such that the second side edge of each sheet member cooperates with the vertical brace superimposed thereover to form a generally rigid tubular structural member,

said wall means further comprising a plurality of tiers of said sheet members with the corrugations of each tier being in substantial vertical alignment with the corrugations of the other tiers to create substantially continuous vertical braces.

4,240,563

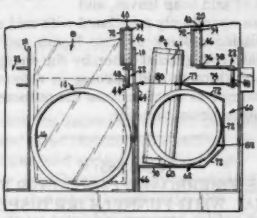
AUXILIARY DISPENSING UNIT FOR SPIRAL VENDOR

Douglas G. Lennartson, Coon Rapids, Minn., assignor to Gross-Given Manufacturing Company, Saint Paul, Minn.

Filed Oct. 27, 1978, Ser. No. 955,313

Int. Cl.³ G07F *11/36*

U.S. Cl. 221—75 **2 Claims**



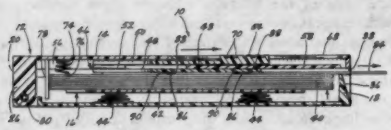
1. An improved vending machine of the type having a housing; a plurality of vertically spaced shelves contained in the housing, each of the shelves having a plurality of dispensing coils of a first pre-determined size mounted thereon; and wherein each of the first sized dispensing coils is located in a dispensing channel having a first pre-determined width; motor means releasably connected to the dispensing coils for rotating the coils in a dispensing direction; and wherein the improvement relates to at least one auxiliary dispensing unit which can be selectively used in any of the dispensing channels, wherein the auxiliary dispensing unit comprises:

(a) a replaceable insert member which is receivable inside the dispensing channel to decrease the cross-sectional width of the dispensing channel from its first width to a second and smaller width, in which the replaceable insert member includes means for holding relatively thin products in a substantially upright tilted position, and in which the product holding means includes an upper support flange horizontally offset a small distance from a side wall of the insert member such that an upper end of each product is slidably retained between the side wall and the support flange; and

(b) a second helical dispensing coil having a smaller size than the first coil and serving to replace the first coil in the dispensing channel, the second dispensing coil being operatively connected to the motor means, whereby the auxil-

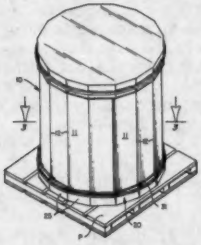
iary dispensing unit is suitable for dispensing the relatively thin products contained in the insert member between the convolutions of the second helical coil.

4,240,564
SOAP LEAF DISPENSER
William F. Pritchard, 220 Metcalf, Maxwell, Iowa 50161
Filed Feb. 22, 1979, Ser. No. 14,045
Int. Cl.³ B65D *83/08*
U.S. Cl. 221—213 **24 Claims**



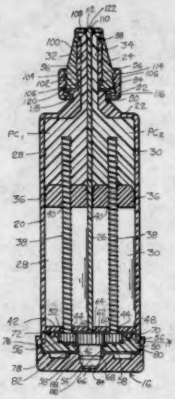
1. A soap leaf dispenser comprising
a housing adapted to support a stack of soap leaves therein, said housing having a top wall, bottom wall and opposite forward and rearward ends with an opening adjacent the forward end for the dispensing of a soap leaf therethrough,
an ejector member,
means for supporting said ejector member in said housing for fore and aft sliding movement between a forward ejecting position and a rearward retracted position,
means for sliding said ejector member between said ejecting and retracted positions,
a hold member extending downwardly from said top wall and including an end portion adapted to pierce the rearward end of said soap leaves, and
biasing means operatively associated with said ejector member for biasing a stack of soap leaves and said ejector member into engagement whereby the engaged soap leaf is dispensed through said opening in response to movement of the ejector member from the retracted position to the ejecting position therefor.

4,240,565
DRUM-LIKE FIBERBOARD CONTAINER FOR BULK MATERIAL WITH FUNNEL-LIKE DISPENSING BOTTOM
Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Portland, Oreg.
Filed Oct. 4, 1979, Ser. No. 81,767
Int. Cl.³ B65D *19/06*
U.S. Cl. 222—105 **10 Claims**



1. A container assembly comprising a tubular body of fiberboard or the like with a bottom structure at its lower end and with side-wall forming panels extending upwardly at the periphery thereof, said bottom structure including support means secured to said side-wall panels; said bottom structure also including a plurality of separate segmental insert sections forming a funnel-like dispensing bottom with a central dispensing opening, each of said separate insert sections comprising an upper material-directing wall having a pair of depending wedge-shaped supporting walls each with a wider end outwardly at one of said side wall panels and extending inwardly to a point spaced from the center of the bottom structure at the dispensing opening, said support walls having lower edges supported by said support means of the bottom to support said material-directing wall so that it inclines downwardly towards said dispensing opening.

4,240,566
CAPTIVE MIXING CAP ARRANGEMENT FOR MULTIPLE CHAMBER CONTAINER
Carl P. Bergman, Pompano Beach, Fla., assignor to Whirlco, Inc., Pompano Beach, Fla.
Filed Sep. 17, 1979, Ser. No. 76,143
Int. Cl.³ B67D *5/42*; B65D *25/44*
U.S. Cl. 222—135 **6 Claims**



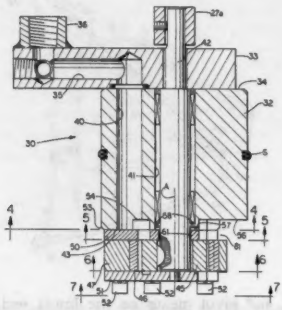
1. A container, having:
wall means including a neck portion;
a captive cap of the axially movable type, said cap having opening means defining an outlet port;
an internal plug to stopper the outlet port of the cap when the cap is axially moved to one extreme;
said container wall means further including an internal web means, said wall means defining at least two internal reservoirs for contents, all on different sides of said internal longitudinal web means, said internal longitudinal web means having an outer end, said internal plug being mounted on said outer end in juxtaposition with said outlet port in said neck portion of said wall means.

4,240,567
PUMP
James J. Gardner, Hamilton, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed May 9, 1979, Ser. No. 37,450
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146 HE **18 Claims**

1. An improved cartridge pump for a sleeve having one end communicating with material to be pumped, said improved pump comprising:
a pump body disposed in said sleeve, and having a lower end disposed near said one end of said sleeve,
a pump ring and a pump gear operatively combined at said lower end of said pump body for pumping material,
a gear plate peripherally surrounding said ring,
a first inlet plate between said pump body and said gear

plate, and partially defining a first pump inlet on an upper side of said pump ring and pump gear,

a second inlet plate disposed on an opposite side of said gear plate from said first inlet plate, and defining a second pump inlet on a lower side of said pump ring and pump gear, and



said first inlet plate and said gear plate being at least partially disposed within said sleeve, said gear plate having outer peripheral surfaces spaced from the surface of said sleeve and defining therewith a material inlet passageway operatively communicating between the inlet defined in said first inlet plate and said material at said one end of said sleeve.

4,240,568

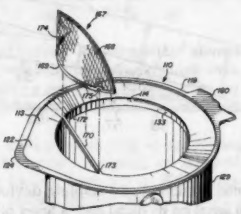
ATTACHMENT FOR LIQUID CARRYING CONTAINER

Danny L. Pool, Phoenix, Ariz., assignor to Robert R. Pool, Phoenix, Ariz.

Continuation-in-part of Ser. No. 853,218, Nov. 21, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,207

Int. Cl.³ B65D *25/48*

U.S. Cl. 222—189 **2 Claims**



1. An attachment for use in combination with a liquid carrying container, which container includes an annular brim carrier proximate the top of an upright continuous sidewall, said brim having an inner peripheral surface with a bottom edge, an outer peripheral surface with a bottom edge and a gutter having inner and outer opposed sidewalls intermediate said peripheral surfaces, said attachment comprising:

(a) a body member including

i. a continuous annular ledge extending over said gutter and having an inner edge defining an opening therethrough, an outer edge, and top and bottom surfaces,

ii. engagement means depending from bottom surface of said ledge for detachably securing the body member to the brim of said container,

iii. a pouring spout having a top surface and extending radially outward from said ledge and having an outer edge, said spout having an axis of symmetry,

iv. a rim upstanding from the top surface of said ledge and pouring spout proximate the outer edges thereof and having a terminal edge,

v. a brush wiping bar formed integral with the ledge of said body and substantially perpendicular to the axis of symmetry of the pouring spout, and

vi. a liquid straining element detachably securable to said brush wiping bar and having a plurality of apertures therethrough for passage of liquid through the opening in said ledge to said pouring spout; and

(b) a closure member including

i. a panel having top and bottom surfaces and a peripheral edge, and

ii. a continuous skirt projecting from the bottom surface of said panel proximate the peripheral edge thereof, and detachably engagable with the rim of said body member for sealingly closing the container; and

(c) hinge means including

i. a first end affixed to said body member, and

ii. a second end affixed to said closure member.

4,240,569

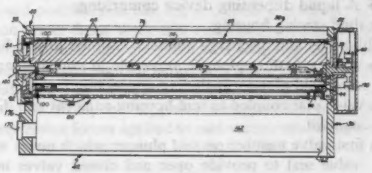
CARPET CLEANING POWDER DISPENSER

Walter L. Bessinger, Grand Haven, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Jul. 3, 1978, Ser. No. 921,194

Int. Cl.³ G01F *11/20*

U.S. Cl. 222—220 **21 Claims**



1. An apparatus for dispensing a carpet cleaning powder and which is adapted to be mounted on a vacuum cleaner having a source of vacuum, said apparatus comprising:

a hopper for containing a supply of powder, said hopper defining an elongated, lower outlet slot;

a metering drum rotatably mounted within said hopper in spaced generally parallel relationship with said outlet slot, said metering drum defining a plurality of perforations for receiving powder;

a stationary mandrel supported by said hopper and extending within said metering drum, the peripheral surface of said mandrel preventing passage of powder through said perforations to said outlet slot;

a dispensing roller rotatably mounted within said metering drum, said roller including a plurality of radially extending projections dimensioned and positioned to mesh with some of said metering drum perforations;

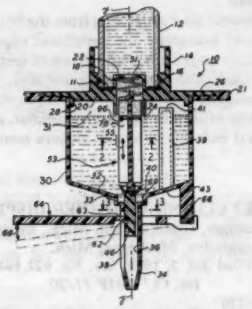
means operatively engaging one of said metering drum and said dispensing roller for rotating said metering drum and said dispensing roller whereby upon rotation of said metering drum, powder within said hopper will be collected within said perforations, be moved towards said outlet slot and said dispenser roller projections will push powder from said perforations allowing the powder to drop through said outlet slot, said means including an air driven motor supported on said hopper, said motor including an air inlet, an air outlet and an output shaft, said output shaft being operatively connected to said metering drum and said air outlet being adapted for connection to the vacuum source of the vacuum cleaner; and

a control valve within said air outlet for opening and closing said air outlet to thereby control the speed of the motor and the rate of dispensing of the powder.

4,240,570
DISPENSING DEVICE WITH INTERCHANGEABLE VALVES PROVIDING FREE POUR AND MEASURED POUR

Edward M. Brown, 128 Passaic Ave., Livingston, N.J. 07039, and Edward J. Towns, Normandy Heights Rd., Convent Station, N.J. 07961

Filed Jan. 29, 1979, Ser. No. 7,013
Int. Cl.³ G01F *11/38*
U.S. Cl. 222—442 10 Claims



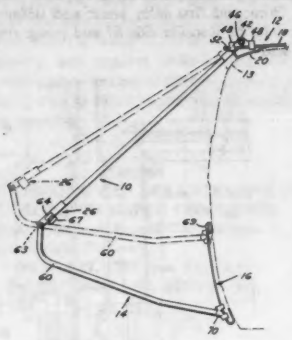
5. A liquid dispensing device comprising:
a fluid storing housing,
fluid inlet and discharge conduits coupled to said housing,
a valve actuating plunger moveable in said discharge conduit, said plunger including connecting means,
a valve seat coupled to said housing adjacent said discharge conduit,
a first valve member on said plunger which mates with said valve seat to provide open and closed valves in accordance with the position of the plunger in said discharge conduit,
a valve link including a second valve member adjacent one end, said second valve member cooperating with said inlet conduit to form an inlet valve, said link including first and second connecting means each releasably selectively mating with the plunger connecting means, said second valve member engaging said inlet conduit means to form said inlet valve when one of said first and second connecting means and plunger connecting means are engaged and a continuously open inlet conduit is obtained when the other of said first and second connecting means and plunger connecting means are engaged.

4,240,571
CAR TOP CARRIER

M. Eric Ernst, Royal Oak, Mich., assignor to Pivot Manufacturing Company, Detroit, Mich.

Filed Aug. 24, 1979, Ser. No. 69,594
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—310 7 Claims

1. A vehicle top carrier comprising track structure, means for mounting said track structure on the top of a vehicle, a carrier frame adapted to support luggage and the like and mounted on said track structure for movement from a generally horizontal carrying position atop the vehicle to a substantially inclined loading and unloading position laterally displaced from the top of the vehicle, a strut having its upper end pivoted to said carrier frame, a guide, means for mounting said guide in vertical position on said vehicle below said track

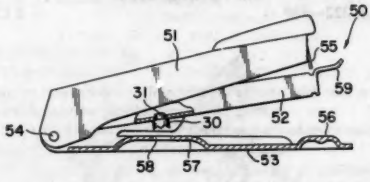


structure, and pivot means on the lower end of said strut mounted on said guide for upward and downward movement.

4,240,572
COMBINED PUNCHING AND STAPLING DEVICE

Yoshio Mitsuhashi, 79, Higashi-Kibogaoka, Asahi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Feb. 26, 1979, Ser. No. 15,354
Int. Cl.³ B25C *5/02*
U.S. Cl. 227—76 13 Claims

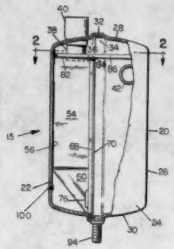


1. A combined punching and stapling device comprising: a base having an anvil on its distal end; a lever pivotally secured at its proximal end by means of a pivot pin to the proximal end of the base; a staple magazine pivotally secured at its proximal end by means of said pivot pin so as to be swingable about the pivot pin relative to the lever; a hammer fixed at the distal end of the lever so as to be movable into and through the magazine for ejecting successive staples from within the magazine and for forcing the staples against the anvil for stapling operation; a die provided on the base; a punch element fixedly mounted on the staple magazine for relative movement into and out of mating engagement with the die as the magazine and the base are pivoted toward and away from each other; and at least three sharp-edged cutting teeth formed peripherally on the distal end of the punch element, said die being in the form of a flat plate having formed therein a hole for receiving the punch element, the axis of said pivot pin lying in a plane extending transversely to the longitudinal axis of the punch element at a position thereon intermediate between the distal end thereof and a location thereon to which the punch element is allowed to advance relative to the inlet of the hole.

4,240,573
METHOD OF BRAZING A PRESSURE VESSEL WITH THERMAL RELEASE PLUG

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Toledo, Ohio

Filed Sep. 29, 1976, Ser. No. 727,881
Int. Cl.³ B23K 1/12
U.S. Cl. 228—184 2 Claims



1. A method of producing a fabricated pressure vessel having an integrally formed thermal release plug, said method comprising the steps of: forming the shell of a pressure vessel from at least two sheet metal members having an overlappping seam, producing at least one apertured well in the wall of one of said members, placing a low melting point metal pellet in said well, placing at least one piece of seam brazing metal adjacent said seam, said brazing metal having a higher melting point than said metal pellet, placing the components in a brazing furnace having a protective atmosphere, and heating said components to brazing temperature to concurrently form a pressure vessel with a brazed seam and a thermal release safety plug.

4,240,574
FLUXLESS BRAZING OF ALUMINUM IN INERT GAS

Duane J. Schmatz, Dearborn Heights, and Walter L. Winterbottom, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1978, Ser. No. 885,911
Int. Cl.³ B23K 1/19
U.S. Cl. 228—217 8 Claims

5. A method of brazing an assembly of aluminum or aluminum alloy parts requiring numerous joining sites, said brazing being carried out in a gas atmosphere containing gaseous species of O_2 and H_2O, each in a concentration between 1–10 ppm, comprising:

(a) depositing a filler metal alloy at the joining sites of said assembly, the latter consisting of Al-Si-Mg, said filler metal alloy having from 0.2 to 0.6% magnesium to (i) shorten the heating time to prevent runoff of liquid filler metal and (ii) to prevent generation of excess magnesium vapor that forms MgO,

(b) heating said assembly and filler metal alloy in said gas atmosphere, said heating being continued to effect brazing without runoff of liquid filler metal and without generation of excess magnesium vapor.

4,240,575
EGG CARTON WITH CRUSH RESISTANT TOP

Charles H. Tange, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

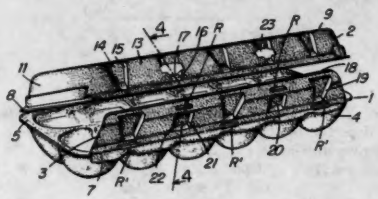
Filed May 7, 1979, Ser. No. 36,947
Int. Cl.³ B65D 1/24, 1/36
U.S. Cl. 229—29 M 1 Claim

1. In a carton adapted for the packaging of eggs and the like having

(1) a bottom tray formed to define a plurality of cells for reception of packaged articles and of a depth such that said articles are enclosed thereby for a portion less than their vertical dimension as packaged,

(2) a dished or cover resiliently hinged to the rear upper edge of said tray and having a front wall, a back wall, and end walls fixed to each other and to a top for said cover, all of such dimensions that the packaged articles are substantially enclosed within the edges of said tray, said front wall lying primarily in a plane sloping inwardly toward said top, and

(3) a latching flap hinged to the front upper edge of said tray by resilient means biasing said flap toward a position outward of vertical from said front edge; said cover and



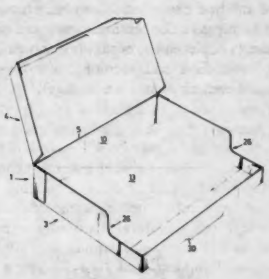
said flap having coacting means associated therewith capable of engagement upon closure of the carton in a manner to maintain such closure;

the improvement which comprises cover support ribs integrally molded on said latching flap whereby when said carton is in a closed position said ribs are in restraining contact with said carton cover front wall; said support ribs being further characterized in that they are positioned at spaced apart locations along said latching flap hinge, and along the upper edge of said latching flap adjacent said coacting means on said latching flap, whereby said support ribs support said cover and resist compressive forces applied to said carton cover and tray.

4,240,576
DISTRIBUTION PACKAGE

Karl R. Persson, Halmstad, Sweden, assignor to Duni Bila AB, Sweden

Filed May 9, 1979, Ser. No. 37,412
Claims priority, application Sweden, May 10, 1978, 7805344
Int. Cl.³ B65D 5/24, 5/66
U.S. Cl. 229—36 12 Claims



1. A distribution or marketing package (1), formed by a single carton blank (2) and comprising a bottom tray (3) having a lid (4) hingedly connected to one of the sides walls (10, 43) of the tray (3) and closable thereto, which can be coupled to a front side wall opposing said side wall of said tray (3) preferably by means of a locking means (27, 47) at the free end or edge of the lid (4) in its closed position; said front side wall (16, 36, 43) of the tray being foldable in a direction outwards or forwards to a position in which characterized in that the front side

wall (16) is extended by an edge flap (20) constituting substantially a perpendicular relationship to the inside of the front side wall (16) and is fixed in this position by means of side flaps (24, 25) folded inwards from the side edges of the side wall (16) to ensure the edge flap (20) to lie flat against the inside of the lid (4) in the completely closed position of the latter making it possible to stack a plurality of filled containers one on top of the other and in the open position of the lid (4) together with the other walls at the same time to constitute a continuous border around the bottom tray (3) preventing the contents sliding out from the package after folding down the front side wall (16) to the same plane as the bottom (13) of the tray (3).

4,240,577

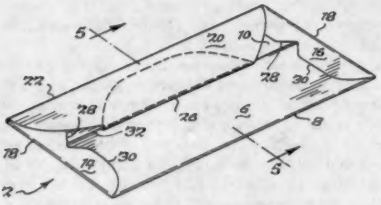
LOCKING ENVELOPE

Richard V. Harrigan, Tonawanda, N.Y., assignor to Niagara Envelope Co. Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 931,375, Aug. 7, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,519

Int. Cl.³ B65D *27/22*

U.S. Cl. 229—76 **3 Claims**



1. An envelope formed of a single sheet of paper or the like comprising:

a. a rectangular front panel and a rectangular back panel, said panels being folded back on each other along a common bottom edge,

b. a substantially rectangular lock flap extending from said back panel and folded back thereon along a common top edge parallel to said bottom edge,

c. an end tab extending from each end of said front panel and folded back along the end edges thereof, said end tabs enfolding and being secured to said back panel and to said lock flap by means of an adhesive encompassing a central area of each of said end tabs thereby securing said panels and lock flaps in folded condition,

d. each of said end tabs having a leading edge and a generally V-shaped notch extending a minor portion of the distance between the leading edge of each said end tabs and the adjacent end edge of said front panel but terminating short of said adhesive, said notches being located to cross and overlie the leading edge of said lock flap at acute angles relative thereto whereby a line of contact is effectively made to relieve lateral stress concentrations,

e. said front and back panels defining an envelope pocket, said back panel and said lock flap defining a lock pocket opening in the direction opposite to that of said envelope pocket,

f. a closure flap extending from said front panel and folded back thereon along a common top edge parallel to said bottom edge to overlie said lock flap, and

g. a tuck flap extending from said closure flap and folded back thereon along a common flap edge parallel to said top edge, said tuck flap being adapted to tuck under said lock flap and into said lock pocket to releasably secure said envelope in closed condition.

4,240,578

SOLID BOWL DECANTER CENTRIFUGES OF THE SCROLL DISCHARGE TYPE

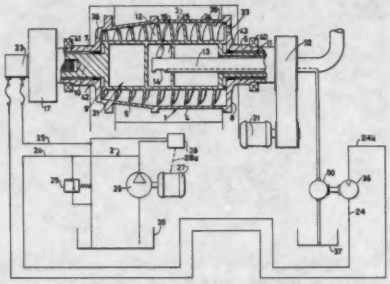
Joseph F. Jackson, 1 W. Royd Villas, Kingcross Rd., Halifax, England

Filed Apr. 26, 1978, Ser. No. 900,215

Claims priority, application United Kingdom, May 4, 1977, 18612/77

Int. Cl.³ B04B *1/20, 9/10*

U.S. Cl. 233—7 **8 Claims**



1. In a solid bowl decanter centrifuge comprising a solid, generally cylindrical bowl having a liquids outlet at one end and a solids outlet at the other end, means for rotating the bowl at a first speed, inlet pipework for introducing influent to the interior of the bowl, a scroll conveyor mounted for rotation within the bowl at a second speed, a first motor whose output shaft is coupled to the scroll conveyer to drive the scroll conveyor at a differential speed relative to the bowl, and a control means for measuring the torque applied to the scroll conveyor and for controlling the speed of the scroll conveyor in dependence upon the measured torque, the improvement comprising a pump means for pumping flocculant into said inlet pipework at a rate dependent upon the differential speed of the scroll conveyor relative to the bowl.

4,240,579

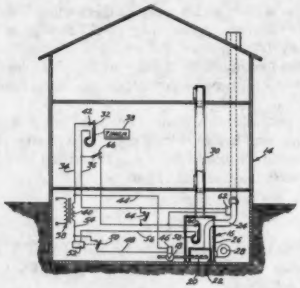
THERMOSTATICALLY CONTROLLED HEATING SYSTEM

Arnold R. Post, 133 Pelham Rd., Philadelphia, Pa. 19119

Filed Oct. 20, 1978, Ser. No. 953,005

Int. Cl.³ F24D *5/10*

U.S. Cl. 236—10 **11 Claims**



1. In a thermostatically controlled heating system for a building comprising:

a furnace having fuel burning means, flue means arranged to carry away combustion products of the fuel burned in said burning means, heat exchange means for conducting heat

away from the furnace to remote parts of the building, and controllable means for effecting intermittent burning of fuel in said burning means;

first temperature-sensitive control means located in a remote part of the building, said temperature-sensitive control means being connected to said controllable means and adapted to shut off said fuel burning means when the temperature in said remote part reaches a first predetermined limit, and to turn on said fuel burning means when said temperature falls to a second predetermined limit;

means for changing said first and second predetermined limits; and

limit switch means responsive to the heat exchanger temperature for overriding the operation of said first temperature-sensitive means when the heat exchanger temperature rises to a third predetermined limit and shutting down the fuel burning means irrespective of the condition of the first temperature-sensitive control means until the heat exchanger temperature falls to a fourth predetermined limit;

the improvement comprising second temperature-sensitive control means, responsive to the temperature of said flue means and connected to overrride the operation of said first temperature-sensitive control means, for intermittently shutting down the fuel burning means irrespective of the condition of said first temperature-sensitive means, said second temperature-sensitive control means being set to cut off operation of said fuel burning means at a predetermined maximum flue temperature above the normal steady-state maximum flue temperature, but below the flue temperature corresponding to said third predetermined limit of the heat exchanger temperature and to restore operation of said fuel burning means at a flue temperature corresponding to a heat exchanger temperature above said fourth predetermined limit.

4,240,580

TEMPERATURE DEPENDENT ELECTRONIC CONTROL SWITCH

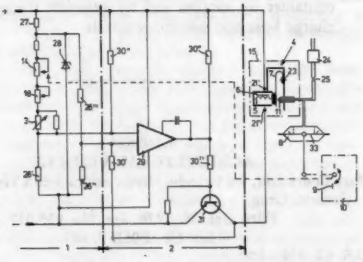
Werner Fehr, Steinheim, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,731

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732916

Int. Cl.³ F24F *7/04*

U.S. Cl. 236—49 **9 Claims**



1. A temperature-dependent electronic control switch, in particular for automatic temperature control in vehicles, having one or more temperature-dependent resistors as sensors in a bridge circuit and an amplifier for the furnishing of control signals for continous adjustment of a valve element, wherein the electrical signals of the sensor are continuously amplified and fed to a magnetic coil and a magnetic field of variable force brought about, and wherein an iron strip disposed in the area of an iron core of the magnetic coil is correspondingly attracted by the variable magnetic field located before an air nozzle controlling an adjustment member for a control valve, continuously uncovers or covers the air nozzle, and thus continuously varies the air pressure before the air nozzle in accordance with the temperature, characterized in that the iron strip itself is embodied as an elastically yielding soft iron strip (7) and has a sealing surface (12) in the area of the air nozzle (11) and that a non-magnetic material (13) having a thickness and breadth adapted to the magnetic field is disposed between the iron core (6) of the magnetic coil (5) and the surface oriented toward the coil (5) of the soft iron strip (7).

4,240,581

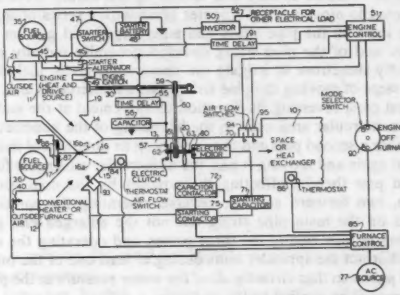
HEATING SYSTEM AND METHOD UTILIZING RECOVERABLE ENGINE HEAT

Joe W. Fowler, Rte. 2, Box 39, Reidsville, N.C. 27320

Filed Aug. 10, 1979, Ser. No. 65,459

Int. Cl.³ F26B *3/04*

U.S. Cl. 237—12.1 **7 Claims**



1. The method of heating a space, comprising:

(a) establishing a first primary heat source comprising a fuel-fired furnace with electrically-powered control and operational means;

(b) establishing a second auxiliary heat source comprising an engine productive of recoverable heat and having a mechanically-driven shaft and a suitable shroud enabling the engine heat to be recovered by moving air past the engine through the shroud;

(c) establishing a duct system connected at one end to a space to be heated and at the other end through duct branches to each of said heat sources and with damper means enabling the space to be selectively connected to such heat sources;

(d) locating a fan in operative association with said duct system and having one drive connection to an electric motor and another drive connection to said engine shaft and associated with electric control means operable in a first mode to drive said fan with said motor, in a second mode to drive said fan with said engine and with means to automatically sense the failure of operation in one mode and to switch both the source of power and fan connection to the other mode; and

(e) at least periodically operating in said second mode and heating said space with a source of pressurized air by associating said fan with said shroud and duct associated with said engine to extract the engine heat to provide a source of pressurized heated air for heating said space.

4,240,582

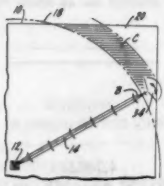
CENTER PIVOT IRRIGATION SYSTEM WITH CORNER WATERING ARRANGEMENT

John L. Anderson, Columbus, Nebr.; John C. Davidson, Alexandria, Minn.; Henry W. Schaaf, Madison, and Charles H. Meis, Genoa, both of Nebr., assignors to Lindsay Manufacturing Company, Lindsay, Nebr.

Division of Ser. No. 801,099, May 27, 1977. This application Oct. 10, 1979, Ser. No. 83,302

Int. Cl.[3] B05B 3/12

U.S. Cl. 239—11 14 Claims



1. A method of operating a center pivot irrigation system which is constructed for irrigating a main circular area of a field and noncircular areas outside of the main circular area in which the system includes a string of pipe supported at intervals on wheeled towers and extending outwardly from and adapted to move around a center pivot with a series of sprinkler units on the pipe string and an enlarged end gun on the outer end of the pipe string directed generally radially outwardly therefrom to irrigate the noncircular areas, including the steps of moving the pipe string past a noncircular area for a first pass, reversing its direction of movement at the end of the noncircular area back to the beginning of the noncircular area for a second pass and then reversing its direction of movement again and moving it past the noncircular area again for a third pass thereby effecting three passes by the noncircular area, two forward and one reverse, operating the sprinkler units on the main pipe string but not the enlarged end gun during at least one of the three passes, and operating the end gun but not the sprinkler units during at least one of the other two passes so that virtually all of the water pressure in the pipe string will be applied to the end gun.

4,240,583

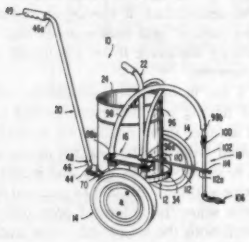
LOW COST, HIGHLY VERSATILE SELF-PUMPING VEHICLE TYPE LIQUID SPRAYER

Gary W. Hughes, Little Rock, Ark., assignor to Chemical Applicator, Inc., Little Rock, Ark.

Filed Apr. 9, 1979, Ser. No. 28,294

Int. Cl.[3] B05B 9/06

U.S. Cl. 239—157 7 Claims



1. In a self-pumping vehicle type liquid sprayer for spraying liquid through at least one spray nozzle assembly over a surface traversed by the sprayer from a container of liquid carried thereby and including a vehicle chassis supporting said container of liquid, side wheels mounted to the chassis for rotation about their axes to effect movement of the chassis over the surface to be sprayed, roller cam pump means carried by said sprayer and operated by vehicle wheel movement to pump liquid from the container to sprayer means carried thereby, the improvement wherein:

a transverse axle is carried by said chassis,

side wheels are mounted to the ends of said axle on opposite sides of said chassis,

a roller cam mounting bar is mounted to at least one of said wheels for rotation therewith, said roller cam mounting bar intersecting the axle, roller cams are mounted to the bar for rotation about their axes on opposite sides of said axle and for rotation with said at least one side wheel circumferentially about said axle,

a vertical pump mounting bar is fixed to said chassis and extends vertically upwardly from said axle on the same side of said wheel as said roller cam mounting bar but spaced therefrom,

a horizontal hose barb mounting bar is fixed to the upper end of said pump mounting bar and extends across said axle to overlie the axle to the same side of said wheel as said roller cam mounting bar,

a pair of hose barbs are fixedly mounted to the hose barb mounting bar and project therethrough,

a flexible pump hose encircles said roller cams and is coupled at its ends to given ends of the hose barbs projecting through said hose barb mounting plate at axially spaced positions,

a suction hose is coupled at one end to the other projecting end of one of said barbs and having the other end of said suction hose opening to the liquid in the container to be sprayed,

a discharge hose is connected at one end to the end of said other barb,

and wherein said at least one spray nozzle assembly includes a spray nozzle and means for mounting said spray nozzle to said horizontal hose barb mounting bar for effecting orthogonal adjustment of said spray nozzle to vary the height of said nozzle and its lateral position with respect to said chassis and thus the spray pattern and its density, and

means for connecting the other end of said discharge hose to said spray nozzle assembly for causing pumped liquid under pressure to spray from said spray nozzle,

whereby rotation of said wheels causes the roller cams in compression to move the points of compression of said pump hose along said pump hose to force liquid from the container by suction and by pressure through the discharge hose and said spray nozzle.

4,240,584

AGRICULTURAL VEHICLE

Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

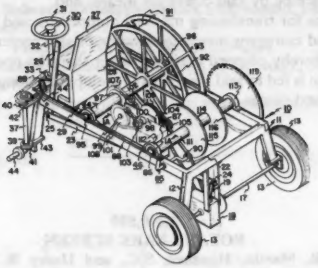
Filed Oct. 26, 1978, Ser. No. 955,017

Int. Cl.[3] B05B 3/18

U.S. Cl. 239—189 6 Claims

1. An agricultural machine including, in combination: a wheel-supported vehicle provided with a frame supplied wheels; manually operable means mounted to said frame for steering said vehicle; a winch, including a field-anchorable winch-cable, carried by said frame; hydraulic means comprising upstanding reciprocating hydraulic jack means for selectively powering said winch to power-wind said winch-cable, whereby to move said vehicle along said winch-cable as the latter winds upon said winch; fluid-spray delivery means carried by said frame; coupling means for coupling via respective branches pressured fluid from an external source to said hy-

draulic means and also to said fluid-spray delivery means; and auxiliary, mechanical power means, self-contained by said



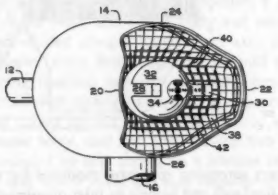
vehicle and mounted to said frame, for selectively powering said vehicle at times when said winch is non-operating.

4,240,585

ELECTROSTATIC SPRAYING APPARATUS WITH REPELLING ELECTRODE MEANS AND GAS SHROUD

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1979, Ser. No. 42,184
Int. Cl.[3] B05B 5/02
U.S. Cl. 239—705 **20 Claims**



1. Electrostatic spraying apparatus comprising:

(a) an electrically non-conductive or dielectric housing having an opening with a perimeter;

(b) liquid atomization means mounted in said housing, said liquid atomization means being capable of dispersing a liquid into a spray of liquid particles directed outwardly through said opening of said housing;

(c) a screen extending essentially radially outwardly from said liquid atomization means and disposed substantially entirely between said liquid atomization means and said perimeter of said opening, said screen adjacent said liquid atomization means providing induction charging electrode means and the remainder of said screen being dielectric or electrically non-conductive, said induction charging electrode means being chargeable to a first polarity and being in cooperative spatial relationship with said liquid atomization means to impart an electrical charge on said liquid particles substantially simultaneously with the formation of said liquid particles to produce an electrically charged spray of liquid particles, said imparted electrical charge being of a second polarity which is opposite the polarity of said induction charging electrode means;

(d) gas inlet means to said housing for delivering a flow of gas to said housing whereby said gas exits through said opening of said housing and substantially concentrically envelops said electrically charged spray of liquid particles; and

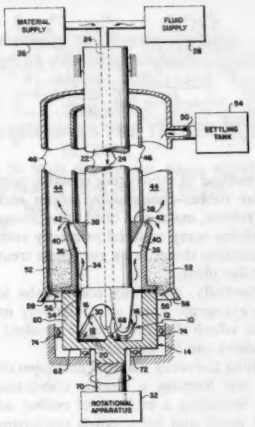
(e) repelling electrode means mounted within said housing and spaced inwardly from said perimeter of said opening, said repelling electrode means being substantially electrically isolated from said induction charging electrode means and being chargeable to a polarity opposite the polarity of said induction charging electrode means and of the same polarity as said electrically charged spray of liquid particles to repel said electrically charged spray of liquid particles immediately prior to the exiting of said electrically charged spray of liquid from said opening.

4,240,586

METHOD AND APPARATUS FOR CRUSHING AND CLASSIFYING PARTICULATE MATERIAL

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Dec. 21, 1978, Ser. No. 971,808
Int. Cl.[3] B02C 13/14, 15/08
U.S. Cl. 241—19 **58 Claims**



1. Apparatus for crushing friable material into particulate form, comprising:

a container having a closed and upward-opening hollow interior and defining a grinding face facing upward into the hollow interior;

grinder apparatus adapted to be positioned in the hollow interior of said container and comprising a support body and a plurality of roller members operatively and rotationally connected to the support body for confronting the grinding face of said container;

means for positioning said grinder apparatus in the hollow interior of said container with the plurality of roller member substantially confronting the grinding face of said container;

means operatively connected for effecting relative rotation of said container and said grinder apparatus;

means for introducing into the hollow interior of said continer a supply of friable material to be crushed into particles;

means for continuously supplying fluid at a predetermined flow rate to the hollow interior of said container and for directing the supplied fluid over the grinding face;

means defining at least one outlet communicating with the hollow interior for conducting particles of material within a flow of fluid exiting the hollow interior of said container, each outlet being positioned at a predetermined position spaced above the grinding face whereby the particles conducted in the flow of fluid out of said closed hollow interior must move upwardly away from the grinding face in order to exit the hollow interior of said container; and

the predetermined flow rate of supplied fluid being sufficient to transport particulate matter of a predetermined range of weights upward and away from the grinding face to each said outlet and being insufficient to remove particulate

matter of weights greater than the predetermined range from the grinding face.

4,240,587

METHOD FOR RECYCLING TIRES AND SIMILARLY COMPOUNDED MATERIALS TO RECOVER USABLE CONSTITUENTS

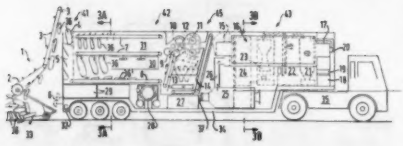
Walter Letsch, Schützenstrasse 7, D-7470 Albstadt 1, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,206

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724813

Int. Cl.[2] B02C *19/00*

U.S. Cl. 241—23 **2 Claims**



1. The method of recovering reusable portions of used tires and similar rubber-compounded scrap materials containing technical rubber, metal and cord, comprising the steps of:

A. supplying scrap material primarily comprising used tires and portions thereof to a cyrogenic treatment section of a vehicular plant;

B. substantially, uniformly cooling the scrap material, by using cyrogenic gases to a relatively minimum temperature at which the scrap can be crushed and recoverable-granulates can be formed;

C. crushing the scrap material and separating rubber granulates and forming a residue comprising the remaining scrap including a mixture of rubber adhering to metal, metal beads and belts, cords comprising both synthetic and natural fibers;

D. pyrolytically-reducing the residue and producing incompletely burned, high-energy gases, including hydrocarbons, soots and scrap metal;

E. separating the scrap metal and soots; and

F. condensing said high energy gases and recovering a pyrolytic oil and operating a power plant with a portion of the gases and converting the gas energy to mechanical energy and operating conveying, cooling, crushing and separating components of said plant.

4,240,588

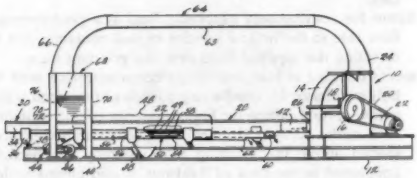
WOOD CHIPPING INSTALLATION

Oscar T. Fulghum, Jr., Wadley, Ga., assignor to Fulghum Industries, Inc., Wadley, Ga.

Filed Mar. 6, 1979, Ser. No. 17,956

Int. Cl.[3] B02C *18/22*

U.S. Cl. 241—80 **10 Claims**



1. A wood chipping installation comprising:

a chipping machine having a knife-carrying chipper disc rotating on a horizontal axis;

conveyor means for feeding wood pieces to be chipped generally horizontally into said machine at an acute angle to the plane of said disc, said conveyor means including screening means for separating chips of predetermined size and smaller chips from the material being fed to said machine by said conveyor means; and

means for transferring material chipped by said machine to said conveyor means in advance of said screening means, whereby chipped material larger than the predetermined size is fed to said machine for rechipping along with other wood pieces.

4,240,589

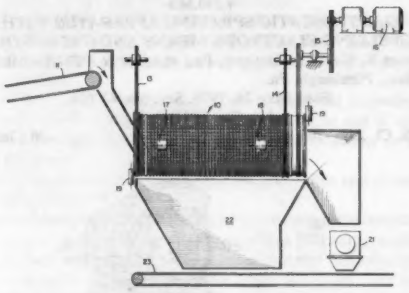
ROTARY BARK SCREEN

Alton R. Martin, Hanahan, S.C., and Henry R. Tranquilli, Brooklyn, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,369

Int. Cl.[3] B02C *23/08*; B07B *1/24*

U.S. Cl. 241—81 **1 Claim**



1. A rotary screening apparatus mounted for rotation about its longitudinal axis and having an inlet opening at one end and an outlet at the other end for effecting the coarse screening of bark and other wood waste material comprising, a self cleaning bark screen in the form of an open tubular shell oriented at a slight inclination, said shell being formed from a plurality of cylindrical hoops variably spaced from one another along the length of said shell and a plurality of longitudinally oriented bars fixedly attached to said hoops to form screen openings therebetween, the variable spacing of the cylindrical hoops serving to divide the screen into three different sections to provide fine screen openings, intermediate screen openings and coarse screen openings, means located internally of said shell and fixedly attached thereto for conveying the material through said shell, said means comprising at least one helical blade element extending the full length of said shell, and a second helical blade located internally of said shell and fixedly attached thereto which begins at the inlet of said shell and extends only for a portion of the length thereof, said second helical blade being arranged to produce a multiple pitch over the portion of the shell where the first and second helical blades overlap, a pair of chains for suspending said shell at each end thereof, means for drivingly rotating said shell, side thrust devices positioned at each side of said shell to prevent unwanted side motions, end thrust devices positioned at each end of said shell to prevent fore and aft motion of said shell, a hopper located beneath said shell for collecting the screened material from said shell, a conveyor assembly associated with said hopper for transporting the screened material to its point of use and a means at the outlet of said shell for collecting and reducing the size of any oversized unscreened material which is then deposited on said conveyor assembly.

4,240,590

BLOWER BEATER MILL

Friedrich W. Lautenschläger, Gechingen, and Hermann Hennecke, Müilheim, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

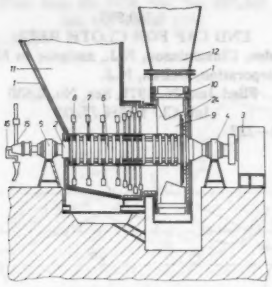
Filed Apr. 30, 1979, Ser. No. 34,364

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821637

The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.[3] B02C *13/10*

U.S. Cl. 241—56 5 Claims



1. A blower-beater mill for drying and milling, comprising: a rotor having a beater body and an impeller; a mill shaft mounting said rotor with said beater body and said impeller and being water-cooled along a longitudinal axis; said beater body having beater arms; hub rings on said mill shaft; said beater arms being fastened between said hub rings; a casing enclosing said mill shaft up to said impeller at a spaced distance therefrom, said casing having passages for beater arms in an area of said beater body, said mill shaft having hub rings substantially surrounded by said casing on a portion of said mill shaft between said beater body and said impeller so that individual rows of beater arms may be dismantled and damaged parts of the casing may be replaced, said casing comprising individual U-shaped rings throughout its entire length, said U-shaped rings overlapping at least one of said hub rings and having vertical legs inserted into passages between said hub rings.

4,240,591

MINCER WITH AT LEAST ONE ROTARY MINCING TOOL

Karl Schnell, Mühlstrasse 28, D-7065 Winterbach, Fed. Rep. of Germany

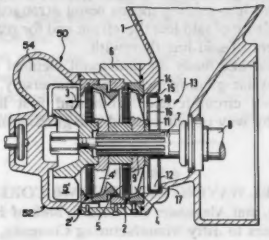
Filed Jun. 22, 1979, Ser. No. 51,137

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827369

Int. Cl.[3] B02C *18/30*

U.S. Cl. 241—82.4 5 Claims

1. In a mincing machine comprising a housing having an inlet for the material to be minced and a discharge for the minced material, and a mincing passage between the inlet and the discharge and having a rotatable shaft therein with at least one rotatable mincing tool affixed thereto for rotation therewith in the mincing passage, the improvement comprising a centrifugal disc affixed to the shaft for rotation therewith adjacent said inlet and in said mincing passage before said at least one mincing tool and having an annular peripheral portion with inturned radially extending end portions at each end defining with said peripheral portion an annular receiving groove for collecting hard objects therein before they move



into said mincing passage and having a passage extending axially therethrough for the materials which are to be minced.

4,240,592

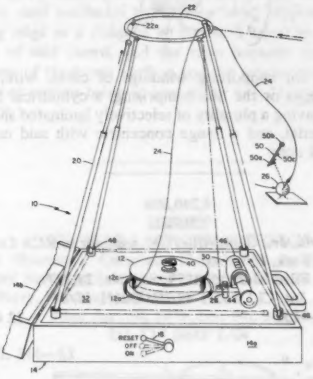
RETRIEVING APPARATUS FOR TETHERED SPORTS MISSILE

Andrew N. Russo, 96 Main St., Everett, Mass. 02149

Filed Nov. 5, 1979, Ser. No. 91,075

Int. Cl.[3] A63B *69/36*

U.S. Cl. 242—54 R 11 Claims



1. Sports missile-retrieving apparatus comprising in combination

A. means forming a housing,

B. motor means mounted with said housing,

C. a spool member mountingly carried with said housing for generally horizontal deployment and for selective rotation by said motor means about a generally vertical spool axis,

D. first line-guiding means forming a substantially planar line-guiding path,

E. mounting means carried with the housing and being repeatedly extendable for supporting said first line-guiding means in a deployed position with said line-guiding path thereof substantially concentric with said spool member and with the plane of said path transverse to the axis of said spool member and spaced from said spool member by more than a fractional multiple of the spool diameter,

said mounting means being repeatedly collapsible from said extended position for the storage of said first line-guiding means and of said mounting means compactly with said housing,

F. a tethering line normally wound on said spool and having one end secured thereto and having means at the other end for attachment to a sports missile, and

G. second line-guiding means carried with said housing aligned with the circumference of said spool member for guiding to the spool circumference said line feeding from said first line-guiding means during said selected rotation, said second line-guiding means being arranged for ready manual release of said line therefrom and for ready manual engagement of said line therewith,

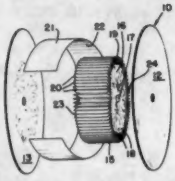
so that said line feeds off said spool element directly to said first line-guiding means and, conversely, feeds onto the spool circumference from said first line-guiding means by way of said second line-guiding means.

4,240,593

REEL HAVING HONEYCOMB CORE

Harris N. Bell, and Alexander R. Morton, both of High Point, N.C., assignors to Jiffy Manufacturing Company, Inc., Hillside, N.J.

Filed Nov. 5, 1979, Ser. No. 90,881
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.8 **10 Claims**



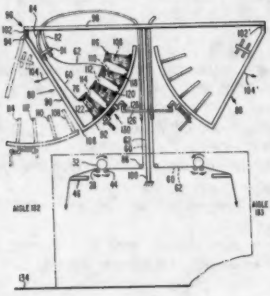
1. A reel for supporting windings of cable, wire, cord, threads, ribbons or the like comprising; a cylindrical honeycomb core having a plurality of selectively laminated sheets of flexible material, and a flange concentric with said core secured to said core.

4,240,594

CREEL

John M. David, Jr., Gainesville, Ga., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,327
Int. Cl.³ B65H *49/02*; D01H *13/04*
U.S. Cl. 242—131 **12 Claims**



1. In a yarn twisting apparatus between first and second aisles including a plurality of bobbin supporting spindles and means for twisting and winding yarn about bobbins mounted on said spindles, a creel for supporting spools of yarn to be twisted and wound by said apparatus comprising:

creel support means located at a level above said twisting and winding means and above one of said aisles,

a creel member including an arm member, a leg member, and a plurality of pegs mounted solely on the leg member, a line passing through the junction between the leg and arm members and the pivot axis being at about right angles to the leg member at the region of the leg member closest the arm member, said creel member being pivotally mounted to said support means about a single fixed pivot axis above said one aisle to permit movement of the creel leg member from a first storage position at a location above said means for twisting and winding to a second lower horizontal load position alongside said yarn twisting apparatus above said one aisle with its pegs approximately upright, and

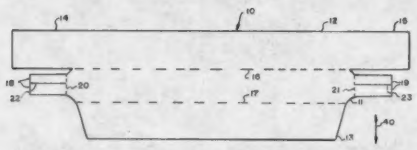
means for releaseably securing said creel member in its first position.

4,240,595

END CAP FOR CLOTH REEL

Samuel Louden, Cinnaminson, N.J., assignor to National Tube & Reel Corporation, Delran, N.J.

Filed Jan. 26, 1979, Ser. No. 6,630
Int. Cl.³ B65H *75/06*
U.S. Cl. 242—222 **5 Claims**



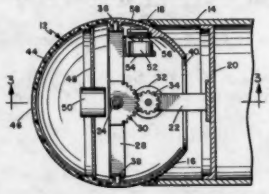
1. In a reel for cloth having a longitudinal dimension and a transverse dimension, a cardboard end cap extending about each transverse end of the reel and comprising a front wall and a first and second articulated side walls integral therewith, said first side wall being provided with extensions on each end to wrap around the longitudinal edge of the cloth reel to form a substantially smooth arcuate surface for the reel, said second articulated side wall having a length equal to or less than the width of said reel, each extension of said first side wall being wrapped around one of the longitudinal edges of the reel and said second side wall being folded onto a broad face of the reel over the end of said wrapped extensions of said first side wall.

4,240,596

ARTICULATED EYEBALL RADOME

Jay B. Winderman, Claremont, and Hans-Peter Schmid, Rancho Cucamonga, both of Calif., assignors to General Dynamics Corporation, Pomona Division, Pomona, Calif.

Filed Jul. 28, 1978, Ser. No. 929,044
Int. Cl.³ F42B *15/00*
U.S. Cl. 244—3.16 **12 Claims**



1. An articulated randome for the forward end of an airframe, said radome comprising:

an articulated spherical nose member adapted to be mounted in the forward end and define the nose of an airframe body,

mounting means for mounting said nose member for pivotal movement about first and second transverse axes,

first and second means for pivoting the nose member about said first and second transverse axes,

energy transmitting window means including an optical lens, in the forward portion of said nose member, and

energy sensing means mounted in said nose member for receiving energy through said window means.

4,240,597

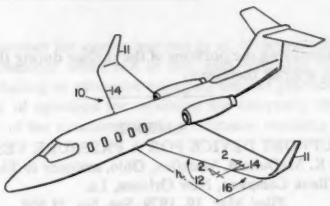
WING WITH IMPROVED LEADING EDGE FOR AIRCRAFT

Roger R. Ellis; W. Marvin Gertsen, and Norman E. Conley, all of Wichita, Kans., assignors to Gates Learjet Corporation, Wichita, Kans.

Filed Aug. 28, 1978, Ser. No. 937,348

Int. Cl.³ B64C *3/14*

U.S. Cl. 244—35 R **6 Claims**



1. A tapered wing of the high speed type with a semispan, root chord, tip chord and intermediate local chords, the wing semispan comprising:

a first wing portion extending from near the root chord to a transition point that is at least about fifty percent of semispan, the first wing portion with a leading edge having substantially a fixed radius selected from the range of about 1.2 percent to about 1.38 percent of the root chord, the transition point being where twice said fixed radius does not exceed about 100.6 percent of the wing thickness at about 5 percent of the local chord at the transition point; and

a second wing portion extending from the transition point to the tip chord, the second wing portion with a leading edge having a radius in percent of local chord which substantially equals the percent of local chord radius at said transition point.

4,240,598

HIGH PERFORMANCE AERODYNAMIC AIRFOIL FOR AIRCRAFT WING

Genevieve M. G. Vinas Espin, Viroflay; Yves F. P. Marchoisne, Paris, and Michel Lazareff, Chatenay-Malabry, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

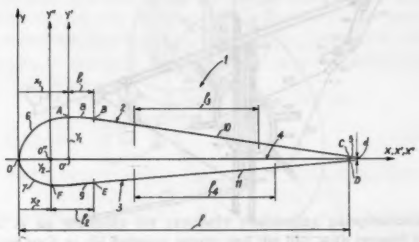
Filed Jan. 25, 1979, Ser. No. 6,292

Claims priority, application France, Feb. 2, 1978, 78 02883; Oct. 13, 1978, 78 29225

Int. Cl.³ B64C *3/14, 27/46*

U.S. Cl. 244—35 R **11 Claims**

1. An aerodynamic wing airfoil comprising non-concave upper surface and lower surface, which are disposed dissymmetrically on either side of a datum axis superposed to the chord of the airfoil, which are forwardly limited along said chord by a leading edge and rearwardly by a trailing edge, and of which the respective thicknesses are counted from said chord, wherein the lower surface and upper surface respectively comprise on the one hand a first convex region of variable curvature disposed between the leading edge and their points corresponding to the maximum lower surface and upper surface thicknesses and intended to produce, partially or totally, the acceleration and depression of the fluid, and on the other hand a second region disposed between said points corresponding to the maximum lower surface and upper surface thicknesses and the trailing edge and subdivised into a first convex zone with moderately variable curvature, disposed immediately behind said points corresponding to the maximum lower surface and upper surface thicknesses and ensuring the deceleration and rapid recompression of the fluid, and into a second zone following the first and continuing to the trailing edge, this second zone presenting a zero or substantially zero curvature and extending over at least 50% and at the most 96%



of the length of the chord, said second zone continuing more weakly the deceleration and ensuring the recompression of the fluid with a pressure gradient which diminishes in the direction of flow, said maximum thicknesses being disposed from the leading edge at a distance at the most equal to 22% of the length of said chord, and the ratio between the maximum thickness of the lower surface and the maximum thickness of the upper surface being at least equal to 0.25 and at the most equal to 1.

4,240,599

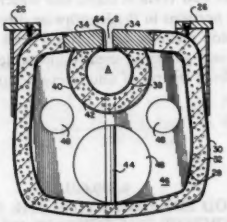
VEHICLE LAUNCHING DEVICE

Joseph Hammond, Cornwells Heights, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,883

Int. Cl.³ B64F *1/04*

U.S. Cl. 244—63 **8 Claims**



1. A pneumatic system for launching an aircraft, comprising:

an elongated frame having a closed chamber adapted to be filled with an amount of compressed air; and

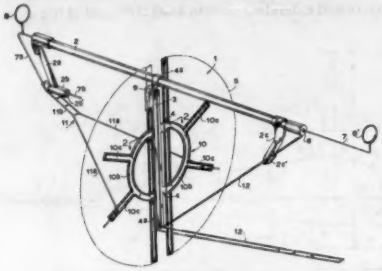
a launch cylinder provided with a longitudinal slot and suspended within the chamber of said frame with the slot exposed to the atmosphere, said cylinder being coupled at one end thereof to the chamber to receive compressed air therefrom so that expansion of the compressed air into the cylinder produces a thrust pressure therein equal to pressure external to the cylinder within the chamber thereby preventing outward distortion of the cylinder along the slot during launch.

4,240,600

KITE-FLYING TOY

Tatsuo Urasaki, 4-58-7, Nanashinodai, Funabashi-shi, Chiba-ken, Japan

Filed Nov. 29, 1979, Ser. No. 98,530
Int. Cl.³ B64C 31/06; A63H 27/08
U.S. Cl. 244—155 R **5 Claims**



1. A kite-flying toy comprising:
(a) a lateral frame having a through hole in the axial direction thereof;
(b) an operation rod which is movably inserted in said lateral frame, and which has a folded portion for engagement at the front end thereof as well as kite string-passing portions at suitable portions thereof;
(c) a front stop member which is downwardly provided at a front portio. of said lateral frame and with which will engage said folded portion of said operation rod;
(d) a vertical frame which is attached via a rotary coupling portion to nearly a central portion of said lateral frame and which downwardly extends;
(e) a pair of wing-mounting frames which are stretched via rotary portions on both sides of said vertical frame;
(f) a pair of wings mounted on said wing-mounting frames;
(g) a wing-opening means of which the ends on one side are fastened to suitable places of said pair of wing-mounting frames, and of which the end on the other side has a plurality of engaging portions formed as a unitary structure;
(h) a rear adjusting means which is fastened to the lower portion of said vertical frame and which has a plurality of hooking portions in the lengthwise direction thereof; and
(i) a rear stop member which has a hook to which will be hooked said adjusting means and which is downwardly formed from the tip of said lateral frame.

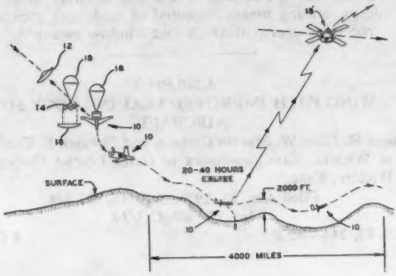
4,240,601

METHOD FOR OBSERVING THE FEATURES CHARACTERIZING THE SURFACE OF A LAND MASS

Robert D. Reed, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,912
Int. Cl.³ B64G 1/62, 9/00
U.S. Cl. 244—160 **4 Claims**

1. A method for achieving surveillance of the surface of a celestial body having a rarefied atmosphere comprising the steps of:
A. deploying from a parachute into the atmosphere a propeller-driven aircraft;
B. piloting the aircraft in a horizontal cruise mode above the surface of the body, whereby the aircraft is caused to fly over portions of the surface to be monitored; and



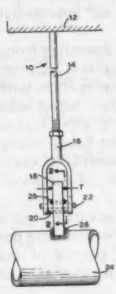
C. monitoring the portions of the surface during the flight of the aricraft thereover.

4,240,602

SUPPORT DEVICE FOR A PRESSURE VESSEL

Dennis K. McDonald, Massilon, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 19, 1979, Ser. No. 21,864
Int. Cl.³ F16L 3/12
U.S. Cl. 248—58 **3 Claims**



1. A support structure for a pressure vessel comprising a lug plate member having one end weld secured to the pressure vessel and formed with an opening, a sleeve passing through and engaging the opening, and a pin passing through and engaging the sleeve and having its opposite ends projecting beyond the sleeve and means for engaging the ends of the pin for support of the pressure vessel, the thickness of the lug plate being less than the length of the sleeve, the sleeve length constituting the required lug plate thickness if the sleeve were not used to support the vessel thereby reducing the size of the weld to the pressure vessel from that which would be required without the sleeve.

4,240,603

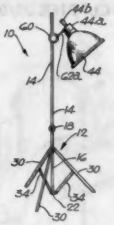
SUPPORT ASSEMBLY

Ned A. Chiariello, Burlington, Wis., assignor to Keystone Ferrule & Nut Corporation, Burlington, Wis.

Filed May 23, 1979, Ser. No. 41,688
Int. Cl.³ A47G 29/00
U.S. Cl. 248—125 **8 Claims**

1. A portable stand for supporting a flood lamp or the like, comprising: a base member having a plurality of outwardly extendible legs for maintaining the base member in a stable, upright position, a plurality of separate, interconnectible extensions having an internally threaded female end and an exter-

nally threaded male end, an end of at least one of the extensions being connectible to the base member, said extensions, in cooperation with the base member, enabling the stand to have a preselected height, and extension retaining means provided on



the base member for storing any one or all of the extensions on the base member when not in use, said extension retaining means including an extension engaging bracket provided with a plurality of openings for receiving the externally threaded male ends of the extensions and an extension retaining clip.

4,240,604

CLAMPING DEVICE AND ITS USE

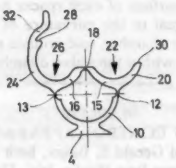
Ulrich K. G. Brach, Zell, Fed. Rep. of Germany, assignor to Zeller-Plastik Koehn, Grabner & Co., Zell, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,722

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724903

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—316 D **14 Claims**



1. Holding device which has a snap-clamp provided with a fastening part, produced in one piece from plastic, especially from polypropylene, whereby the snap-clamp has a bending spring mechanism with two mutually resilient legs (spring legs) and two interconnected control levers, connected with the ends of the spring legs always by a film-hinge, and at least one of the control levers has an extension, which together with a control lever forms a gripper for an object to be held, and whereby the sum of the distances between the middle and the two outside film-hinges in case of a relaxed spring mechanism is greater than the distance between the two outside film-hinges, characterized in that the spring mechanism is a curved or angular bending spring (**10**, **10'** etc.), and in that the control levers (**15**, **16** etc.) fit into the open side of the bending spring in such a way that the sum (a+b) of the distances between the middle (**18**) and the two outside film-hinges (**12**, **13**) is only a little smaller than the uncoiled length (d) of the bending spring (**10** etc.).

4,240,605

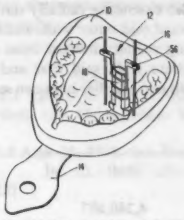
JIG ASSEMBLY FOR PREPARING DENTAL IMPRESSIONS FOR CASTING

Robert W. Waltke, Bayside, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 17, 1979, Ser. No. 75,931

Int. Cl.³ A61C *5/10, 13/08*

U.S. Cl. 249—54 **18 Claims**



1. A jig assembly for precisely positioning paraphernalia means such as die forming means and the like with respect to a negative tooth impression provided in a negative dental mould for use in casting a dental model having at least one unitary tooth die including a stem and prepared tooth, said prepared tooth replicating said tooth forming said negative tooth impression, said unitary tooth die being removable from said model, said jig assembly comprising

pin means insertable in said dental mould adjacent said negative tooth impression and

paraphernalia means, said paraphernalia means being open ended and articulating with said pin means and positionable above said negative tooth impression in spaced relationship thereto, said paraphernalia means being continuously movable with respect to said pin means in directions substantially parallel with long axis of said pin means, and continuously movable along a plane defining buccolingual midline of said negative tooth impression normal to said pin means long axis, and continuously tiltable in said plane away from perpendicularity with said pin means long axis, and combinations of said directions; said paraphernalia means having a hollow interior for receiving die material poured into said dental mould to form said stem of said unitary tooth die, said interior of said paraphernalia means replicating configuration of said stem.

4,240,606

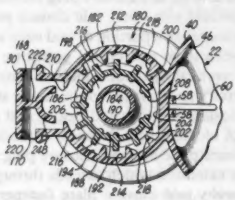
FILL VALVE

Dwight N. Johnson, El Toro, Calif., assignor to JH Industries, Inc., San Marcos, Calif.

Division of Ser. No. 809,382, Jun. 23, 1977, Pat. No. 4,180,096. This application Jun. 12, 1979, Ser. No. 47,945

Int. Cl.³ F16K *47/08*

U.S. Cl. 251—127 **2 Claims**



1. A valve assembly comprising inner, intermediate and outer telescoped cylindrical walls, means providing fluid communication with the region within said inner wall, means in-

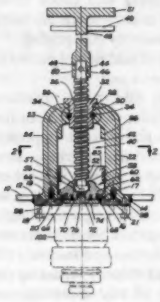
cluding a valve member engageable with one end of said inner wall for controlling fluid flow between the interior of said inner wall and the region between said inner and intermediate walls; an aperture in said intermediate wall permitting flow between said region and the space between said intermediate and outer walls, a passage permitting flow from said space to the exterior of said outer wall, said passage and said aperture being angularly spaced from one another along said space, a first plurality of baffles extending radially outward from said intermediate wall toward said outer wall, and a second plurality of baffles extending radially inward from said outer wall toward said intermediate wall, said first and second baffles being interspersed with one another between said aperture and said passage.

4,240,607

TOP OPERATED TANK CAR LADING VALVE ALSO OPERABLE FROM THE BOTTOM

Edwin S. Carlson, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,523
Int. Cl.[3] F16K *27/03, 1/48*
U.S. Cl. 251—144 9 Claims



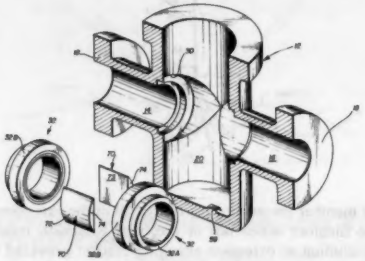
1. A top operated tank car valve assembly comprising: a mounting flange having a lower surface; said flange welded to an opening in the bottom of the tank; a valve seat located inboard of said mounting flange and above said lower surface; a valve closure plug movable vertically between open and closed positions relative to said seat; a vertically extending cage integrally attached to said mounting flange; said cage having a threaded horizontal portion; a threaded stem located within said cage horizontal portion attached to a top operator extending to the top of the tank; said stem extending within an opening in said valve closure plug; a non-round cavity formed in the bottom of said stem; said closure plug including a closure seat which engages said valve seat; said closure plug including guide means which engage a portion of said cage as the closure plug moves between open and closed positions; said closure plug including a vertical opening which communicates with said non-round cavity and extends to the lower surface of the closure plug; a closure plate located below said closure plug held in place with closure plate fasteners extending from the bottom of the closure plate into said closure plug; said closure plate including an extension which extends through said vertical opening; whereby said closure plate fasteners can be removed from the bottom of the car, providing access to the non-round cavity in the valve stem, and said closure plug may be opened from the bottom of the tank by extending a tool having a non-round portion through said vertical opening which engages said non-round cavity.

4,240,608

CONTROLLED FLOAT SEAT ARRANGEMENT FOR EXPANDING GATE VALVES

Charles C. Partridge, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,761
Int. Cl.[3] F16K *25/00*
U.S. Cl. 251—167 7 Claims



1. An expanding gate valve comprising:

a valve body having a substantially cylindrical flow passage and a substantially cylindrical body cavity intersecting with the flow passage to form a valve chamber, said body having a pair of spaced apart seat pockets formed about the flow passage adjacent said valve chamber;

a pair of annular valve seats mounted in the seat pockets, each seat having an inner surface facing the valve chamber;

an expanding gate assembly mounted in said body cavity for movement in a collapsed condition between open and closed positions, said gate assembly expanding to an expanded condition in both the open and closed positions to seal against said inner surfaces of the valve seats;

a pair of spacers mounted within the valve chamber on opposite sides of said gate assembly between said seats, said spacers being long enough to engage said inner surfaces of the seats to prevent both valves seats from moving inwardly far enough to contact the gate assembly when same is in the collapsed condition; and

an arcuate outer surface of each spacer having a curvature substantially equal to the curvature of the flow passage within the valve chamber, said arcuate surface contacting the valve body within the valve chamber.

4,240,609

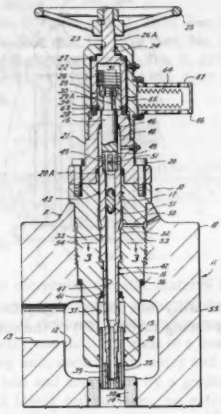
FLOW CONTROL APPARATUS

Guerry L. Hahn, and Gerald S. Baker, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 7, 1978, Ser. No. 931,462
Int. Cl.[3] F16K *39/02*
U.S. Cl. 251—282 6 Claims

1. Flow control apparatus, comprising a body having a flowway therein with an inlet thereto and an outlet therefrom, a closure element reciprocable within the flowway between positions for controlling the flow of fluid from the inlet to the outlet, a stem on the closure element extending through an opening in the body, means connected to the stem for so reciprocating the closure element, said body opening having an enlarged portion to form an annular space about the stem, and said stem having a piston thereon within the space, first means sealing between the piston and enlarged portion of the body opening, second means sealing between the opening and the stem intermediate the piston and exterior of the body to form with said first sealing means a first pressure chamber within said space, and third means sealing between the opening and the stem intermediate the piston and flowway to form with said first sealing means a second pressure chamber within said space, means including a passageway connecting the flowway

with the first pressure chamber in order to transmit the fluid pressure within the flowway to the effective pressure area of the piston within said first chamber, and means including a port connecting the second pressure chamber with the exterior of



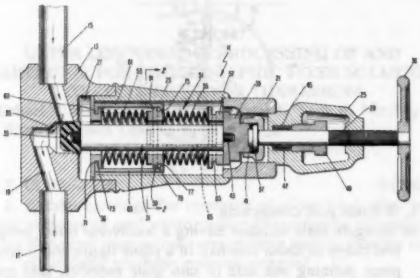
the body, in order to transmit ambient pressure to the effective pressure area of the piston within said second chamber, the effective pressure area of the piston within said first pressure chamber being substantially equal to the cross-sectional area of said stem within the third sealing means.

4,240,610

HIGH PRESSURE BELLOWS ASSEMBLY

Edward F. Trimble, Cumberland, R.I., assignor to EG & G Sealol, Inc., Warwick, R.I.

Filed May 23, 1979, Ser. No. 41,917
Int. Cl.³ F16K *31/44, 41/10*
U.S. Cl. 251—335 B **9 Claims**



1. A high pressure bellows assembly for use within a housing having a pressure chamber and stem means mounted for longitudinal movement in the pressure chamber and extending outwardly of said housing; said bellows assembly comprising:

at least two bellows segments arranged in axially spaced tandem relationship and adapted to be positioned in said chamber around said stem means, one end of said bellows assembly having means for sealing attachment to said housing, and the other end having means for sealing attachment to said stem means, a floating collar sealingly interconnecting adjacent ends of said tandem segments;

means disposed entirely exteriorly of said bellows segments for allowing free contraction of but limiting the expansion of said bellows segments including at least one elongated restraining member axially spanning an individual one of each said bellows segments, the restraining members spanning adjacent bellows segments being arranged out of axial alignment with each other;

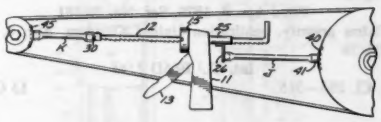
said at least one restraining member which spans the bellows segment attached to said housing being fixed relative to said housing and including abutment means engageable with the adjacent floating collar, said at least one restraining member which spans the bellows segment attached to said stem means being fixed relative to said stem means and including abutment means engageable with the adjacent floating collar.

4,240,611

BELT TIGHTENING APPARATUS

Ronald D. Bartlett, c/o Metropolitan Water District, Earp, Calif. 92242

Filed Aug. 28, 1978, Ser. No. 937,330
Int. Cl.³ B66F *1/04*
U.S. Cl. 254—237 **2 Claims**



1. In a ratchet advanced caulking gun handle assembly having a ratchet bar extending therethrough and a lever for advancing said ratchet bar relative said handle assembly the improvement comprising:

a first end fitting adapted to be secured to one end of said ratchet bar including a first cantelevered projection extending laterally therefrom;

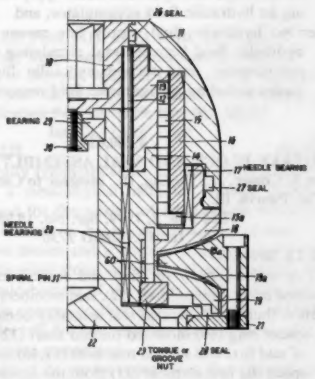
an opposing support engaged to abut said handle assembly and including a second cantelevered projection extending laterally therefrom said first and second projections being conformed for insertion between adjacent pulleys connected by a pulley belt.

4,240,612

WINCH FOR THE SLIP-FREE HAULING OF A ROPE

Walter Mehnert, Ottobrunn, Fed. Rep. of Germany, assignor to Firma Naviga-Etablissement, Vaduz, Liechtenstein

Filed Apr. 4, 1979, Ser. No. 26,944
Int. Cl.³ A62B *1/08*
U.S. Cl. 254—344 **15 Claims**



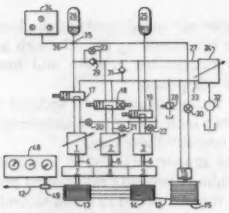
1. A winch, comprising base means, crank power input means and clamping sheave means operatively supported on said base means, power transmission means including control-

lable coupling spring means operatively interposed between said power input means and said sheave means for forming a power transmission path, and control means operatively connectable to said coupling spring means for closing, opening or partially opening said power transmission path whereby the movement, speed, acceleration, deceleration and stopping of said sheave means is precisely controllable, said power transmission means comprising upper and lower coupling members (13, 14), said upper coupling member (13) having a shoulder forming a stop limiting upward movement of said coupling spring means (15), said winch further comprising sleeve free wheeling means (12) inserted into said upper coupling member with a press fit.

4,240,613
WINCH MECHANISM

John C. Braithwaite, Broughton-in-Furness, England, assignor to Vickers Shipbuilding Group Ltd., Barrow-In Furness a, England

Filed Apr. 3, 1979, Ser. No. 26,681
Claims priority, application United Kingdom, Apr. 4, 1978, 13204/78
Int. Cl.³ B66D 1/48
U.S. Cl. 254—315 13 Claims



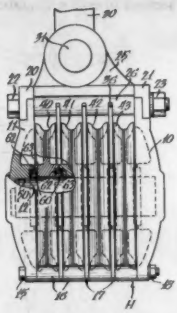
1. A winch mechanism comprising:
a rope haulage mechanism;
a variable displacement hydraulic pump/motor;
coupling means coupling said pump/motor to said rope haulage mechanism for driving said rope haulage mechanism;
a circulating pump;
first hydraulic fluid supply line means for conveying hydraulic fluid between said circulating pump and said pump-/motor, said first hydraulic fluid supply line means including an hydraulic fluid accumulator; and
second hydraulic fluid supply line means for conveying hydraulic fluid between said circulating pump and said pump/motor, said second hydraulic fluid supply line means including an hydraulic fluid reservoir.

4,240,614
SHEAVE BLOCK AND SEAL ASSEMBLY THEREFOR

Glen S. Comer, Jr., Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 2, 1979, Ser. No. 18,952
Int. Cl.³ B66D 1/36
U.S. Cl. 254—393 8 Claims

1. A seal assembly for first and second members (11,40) mounted on a common shaft (12), said members having relative rotation therebetween, said seal assembly comprising:
a spacer ring (60) mounted on said shaft (12) independently of said first and second members (11,40) and positioned to space the first member (11) from the second member (40); and
a pair of lip seals (62,63) of elastic material, one of said lip seals being mounted on the first member (11) and the other of said lip seals being mounted on the second member (40) coaxially adjacent said one lip seal, each of the lip seals having a part (64/65) thereof surrounding and extending

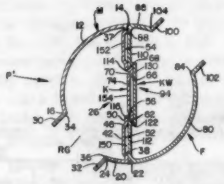


radially inwardly into sealing engagement with a radially outwardly facing surface (59) of the spacer ring (60).

4,240,615
FENCE POST WITH INVERTIBLE SECTIONS

Raymond W. Sickler, Wellsburg, N.Y., assignor to Dura-Bilt Products, Inc., Wellsburg, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,020
Int. Cl.³ E04H 17/14
U.S. Cl. 256—60 9 Claims



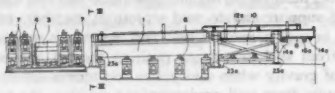
1. A fence post comprising:
an elongate male member having a transverse outer peripheral shape of about one-half of a plane figure and a cross-piece defining one side of said male member, said male member including a key defining means extending longitudinally of said male member on said cross-piece near the longitudinal center of said cross-piece and rail attaching means on said male member; and
an elongate female member connected to said male member and having a transverse outer peripheral shape of about one-half of a plane figure and a female cross-piece defining one side of said female member, said female member including a keyway defining means extending longitudinally of said female member on said female cross-piece near the longitudinal centerline of said female cross-piece, and rail attaching means on said female member, said male key defining means slidingly engaging said female keyway defining means to attach said members together, said rail attaching means being oriented obliquely with respect to said cross-pieces.

4,240,616

APPARATUS FOR HEAT-TREATING METALLIC MATERIAL

Nobuhiro Takahashi, Fukuyama, and Ken-ichi Hirata, Okayama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 874,665, Feb. 2, 1978, Pat. No. 4,188,243. This application Jul. 12, 1979, Ser. No. 56,936
Claims priority, application Japan, Feb. 8, 1977, 52-12064
Int. Cl.³ C21D *9/00, 9/08, 1/42*
U.S. Cl. 266—119 **8 Claims**



1. Apparatus for conveying metallic material to be treated in a heat-treating zone comprising: a pair of entry guide rail means and a pair of delivery guide rail means respectively provided at the entry and delivery ends of a heat treating zone including a heating unit, each of said entry and delivery guide rail means being laid and supported by a girder and having a pair of upper and lower rail surfaces; an entry car having a plurality of wheels disposed on said entry guide rail means so as to clamp said rail means from the upper and lower sides thereof and rotate on the upper and lower rail surfaces; a drive mechanism for driving said entry car without any slip between said entry car and said entry guide rail means; a delivery car having a plurality of wheels disposed on said delivery guide rail means so as to clamp the same from the upper and lower sides thereof and rotate on the upper and lower rail surfaces thereof, said delivery car further having a plurality of brakes adapted to be directly pressed against said delivery guide rail means when said delivery car is moved by said entry car with said metallic material to be treated being gripped between said entry and delivery cars; and a plurality of free rotatable rolls for supporting said metallic material gripped between said cars.

4,240,617

ULTRA LOW VOLUME PROCESSING OF AND CARTRIDGE FOR PHOTOGRAPHIC FIXER SOLUTION TO RECOVER SILVER THEREFROM

Michael T. MacKay, Sandy, Utah, assignor to B. R. MacKay & Sons. Inc., Salt Lake City, Utah

Filed Oct. 25, 1979, Ser. No. 88,257
Int. Cl.³ C22B *11/04*
U.S. Cl. 266—170 **9 Claims**

1. A tube cartridge for recovery of silver from ultra low flow volumes of used photographic fixer solution comprising:

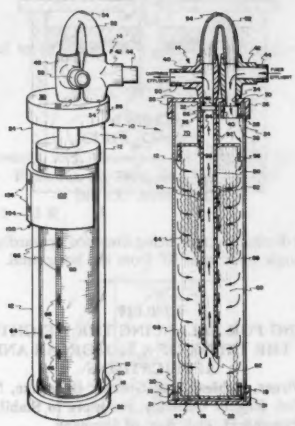
an elongated narrow light transmitting hollow exterior tube of yieldable synthetic resinous material;

first closure means of synthetic resinous material closing the bottom of the exterior tube in fluid-tight relation, the first closure means comprising coil-centering means exposed adjacent the interior of the exterior tube;

second closure means of synthetic resinous material substantially closing the top of the exterior tube in fluid-tight relation, the second closure means comprising a concentric coil-centering sleeved port by which solution is gravity discharged from the interior sleeve and an eccentric sleeve port by which solution is introduced into the exterior tube;

a small diameter solution exit conduit of synthetic resinous material comprising an integral extension of the concentric sleeved port extending along the centerline of the exterior tube along substantially the full length of the exterior tube to a location a predetermined distance above the first closure means, the lower end of the exit conduit being open to receive solution to be discharged from the exterior tube;

a hollow coil of iron screen concentrically disposed within the exterior tube and having an inside diameter greater than the diameter of the exit tube whereby a first annular flow chamber is defined therebetween and an outside diameter less than the inside diameter of the exterior tube whereby a second annular flow chamber is defined therebetween, the coil resting concentrically upon the first closure means with the top below the second closure means so as to define an influent chamber therebetween



the concentricity being established and retained by the coil-centering means;

cap means of yieldable synthetic resinous material force-fit over the top of the coil and having a central opening of a diameter less than the diameter of the exit conduit and through which the exit conduit is force-fit to create a fluid-tight relation;

spacer means within the influent chamber interposed between the second closure means and the coil to establish and retain predetermined distance between the lower end of the exit conduit and the first closure means.

4,240,618

STIRRER FOR METALLURGICAL MELTS

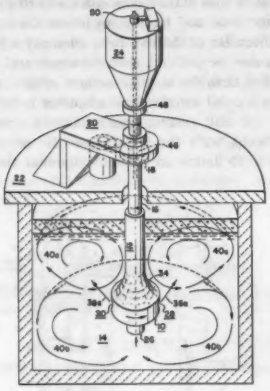
Jan-Erik Ostberg, Torps Sateri, Bettna, Sweden (640 33)

Continuation of Ser. No. 966,942, Dec. 4, 1978, which is a continuation of Ser. No. 817,727, Jul. 21, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,332
Int. Cl.³ C21C *7/00*
U.S. Cl. 266—235 **10 Claims**

1. In a vertically symmetrical mechanical stirrer adapted for submersion in a metallurgical melt, for rotation around its vertical axis, and for the mixing of additives throughout the said melt, the said stirrer having a top section operably connected to drive means and a bottom which includes an entrance canal disposed along said vertical axis and has its entrance in the said bottom of the stirrer, and at least two discharge canals in communication with the entrance canal, each canal having an exit feeding into the metallurgical melt, the improved structure comprising:

an upper body of the stirrer constituting the top section that is disposed above the exits of the discharge canals and within which upper body is axially disposed an addition canal in supply communication with the discharge canal, the symmetrical surface of the upper body consisting of a

torus conforming surface substantially free of horizontal and rectilinear surfaces; and,



eacn said discharge canal being disposed upwardly to its exit at an angle of at least 10° from the horizontal.

4,240,619

GAS SPRING FOR BALANCING THE WEIGHT OF THE LID ON THE TRUNK OF A MOTORCAR AND LIKE APPLICATIONS

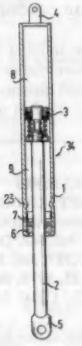
Winfried Wirges, Koblenz, and Guenter Bauschke, Neuhäusel, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,417

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734276

Int. Cl.³ E05F *15/02*; F16F *9/02*

U.S. Cl. 267—65 R **12 Claims**



1. A gas spring apparatus, comprising:

(a) a support;

(b) a structural member mounted on said support for movement in a path having a vertical component between a lowermost and topmost position;

(c) a gas spring including

(1) a cylinder defining a sealed cavity therein and having an axis,

(2) a piston rod axially movable in sealing engagement with said cylinder inward and outward of said cavity, respective axially terminal portions of said piston rod being located in said cavity and outside said cavity in all axial positions of said piston rod,

(3) a piston axially movable on said piston rod in said cavity, said piston separating two compartments of said cavity from each other,

(4) abutment means on the axially terminal portion of said piston rod in said cavity,

(5) yieldably resilient means operatively interposed between said piston and said piston rod and axially biasing said piston towards a position of abutting engagement with said abutment means, and

(6) a fluid under superatmospheric pressure filling said compartments and biasing said piston rod outward of said cavity in a predetermined axial position of the piston rod relative to said cylinder;

(d) securing means securing said piston rod and said cylinder to said support and to said structural member, respectively, in such a manner that said member is moved upward from said lowermost position thereof against the force of gravity when said piston rod moves outward of said cavity from said predetermined position, the biasing force of said fluid being insufficient for moving said member to said topmost position against said force of gravity;

(e) first valve means responsive to movement of said piston rod outward of said cavity for opening a first flow path between said compartments and to movement of said piston rod inward of said cavity for closing said flow path; and

(f) second valve means for opening a second flow path between said compartments upon axial movement of said piston away from said position of abutting engagement against the restraint of said yieldably resilient means and for closing said second flow path when said piston is in said position of abutting engagement.

4,240,620

GRIPPING ARRANGEMENT

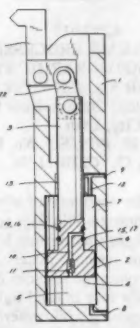
Josef-Gerhard Tünkers, Ratingen, Fed. Rep. of Germany, assignor to Tuenkers GmbH, Ratingen, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,839

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813694

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—24 **13 Claims**



1. A gripping arrangement comprising gripping means movable through a predetermined stroke between a rest and a gripping position; a cylinder including a double acting piston operatively connected to said gripping means for urging the latter from said rest to said gripping position with a predetermined pressure, said piston subdividing the interior of said cylinder into a lower cylindrical chamber and an upper annular chamber; first communication means between said cylindrical and said annular chambers for partially counteracting said pressure during a predetermined initial portion of said stroke for permitting said gripping means to move under said pressure only during the remaining portion of its stroke toward said gripping position, first connecting means for alternately sup-

plying and withdrawing pressure medium from said cylindrical chamber; second connecting means for alternately supplying and withdrawing pressure medium from said annular chamber; and second communication means arranged between said annular chamber and said second connecting means, said second communication means being closed by said piston when said piston reaches the end portion of said stroke towards the gripping position.

4,240,621

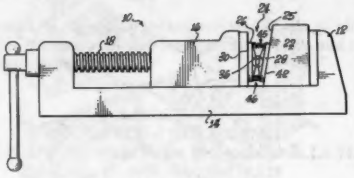
MULTIDIRECTIONAL VISE SQUARE DEVICE

Dominic Daddato, 8043 Elden Ave., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 820,255, Jul. 29, 1977, abandoned. This application May 15, 1978, Ser. No. 905,848

Int. Cl.³ B25B *1/24*

U.S. Cl. 269—264 **21 Claims**



1. A unitary vise square device adapted to secure an irregularly shaped workpiece between the opposed jaws of a vise under clamping force, said device comprising:

a first plate having a jaw-engaging face and an opposite side defining a concave recess,

a second plate having a workpiece-engaging face and an opposite side defining a concave recess and confronting the first plate,

said opposite side of at least one of said first and second plates being inclined outwardly of the recess to prevent interference between the plates upon relative angular displacement therebetween,

at least one of said concave recesses comprising a spherical sector cap surface no larger than hemispherical,

a spherical bearing member configurated to interfit the confronting recesses of the first and second plates, whereby the plates are positionally adjustable through substantial relative angles to accommodate the irregular shape of the workpiece, and

resilient biasing means interconnecting the plates and securing the plates and the spherical member in a unitary assembly,

whereby the biasing means is deformable under vise clamping force to accommodate relative movement between the plates and the spherical member to secure the second plate and the workpiece under the vise clamping force.

4,240,622

MECHANISM FOR TRANSPORTING SHEETLIKE RECORDING CARRIERS

Albert Rutishauser, Rutihofstrasse 38, 8713 Werkion, Switzerland

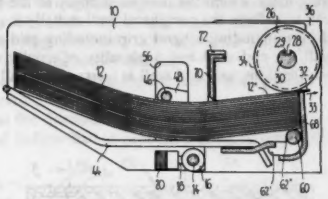
Filed Apr. 16, 1979, Ser. No. 30,380

Claims priority, application Switzerland, Apr. 18, 1978, 41257/78

Int. Cl.³ B65H *1/12*

U.S. Cl. 271—126 **11 Claims**

1. In transportation mechanism for sheetlike recording carriers including a magazine having lateral guide elements for sheets to be stacked, a singling mechanism and driving roller means for conveying only one sheet at a time from the magazine, the improvement comprising means for holding stacked sheets arched in the direction of conveyance to give said sheets stiffness in lateral direction and including physical means movably substantially perpendicularly to said lateral and conveyance directions for pushing on the stacked sheets in the middle



area thereof to to cause the stacked sheets to be arched as aforesaid.

4,240,623

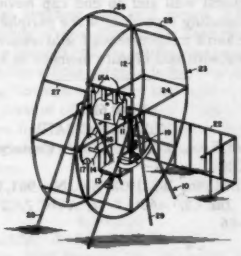
CIRCLE SWING

Paul A. Edwards, 35 E. Greenway Rd., Phoenix, Ariz. 85040

Filed Jul. 12, 1978, Ser. No. 923,717

Int. Cl.³ A63G *1/20*

U.S. Cl. 272—33 R **4 Claims**



1. A swing, comprising: a swing seat;

an adjustable counterweight;

support means whereby a person in said swing seat may, upon adjustment of said counterweight, be transported by said support means in an arc above a horizontal pivot axis;

said counterweight having a drum shaped body provided with a cutout portion lying along the longitudinal axis of said drum;

said horizontal pivot axis being located within said counterweight cutout portion while a person is mounting said swing seat;

means for maintaining the center of gravity of said counterweight nearly adjacent to said horizontal pivot axis while a person is mounting said swing seat; and interlock means for returning said counterweight by gravity when said seat is directly below said horizontal pivot axis to the position where its said center of gravity is nearly adjacent to said horizontal pivot axis before a person can dismount from said swing seat.

4,240,624

HAND GRIP EXERCISE DEVICE

Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626

Filed Aug. 29, 1978, Ser. No. 938,094

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—68 **5 Claims**

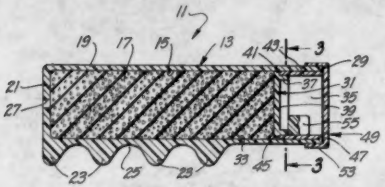
1. A hand grip exercise device comprising:

an elongated enclosure having a cavity therein, said enclosure being of a size to be grasped and squeezed by a hand of the user, said enclosure having a peripheral wall which is resiliently deformable and which can be deformed radially inwardly;

resilient deformable means in said cavity whereby manual deformation of the peripheral wall radially inwardly resiliently deforms said resilient means to thereby increase the squeezing force which the user must apply to the peripheral wall to deform the peripheral wall radially inwardly;

said enclosure including a hand grip including said peripheral wall, an end wall and a plurality of axially spaced radial projections, said end wall at least substantially closing one end of said peripheral wall, said enclosure including means at least substantially closing the other end of the peripheral wall; and

said closing means including a closure member extending across and at least substantially closing said other end of the peripheral wall and an end cap having a peripheral wall surrounding a portion of the peripheral wall of said enclosure and a transverse wall, said transverse wall being engageable with said closure member to retain the latter.

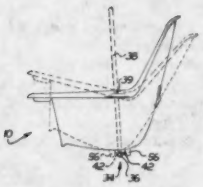


4,240,625

RECLINING CHAIR

Paul K. Meeker, Kent, Ohio, assignor to Century Products, Inc., Cleveland, Ohio

Filed Nov. 16, 1978, Ser. No. 961,382
Int. Cl.[3] A63G 9/16; A47C 1/02
U.S. Cl. 272—86 **9 Claims**



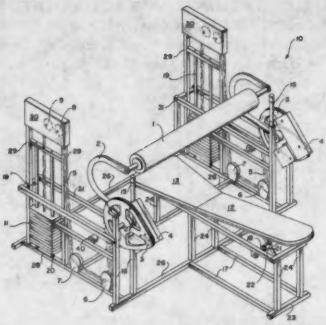
8. A swing assembly for supporting a person for swinging movement, said swing assembly comprising a base, seat means for receiving a person, said seat means having a rigid bottom, a rigid support pivotally connected with said base and said seat means, said support having a first portion disposed beneath the rigid bottom of said seat means, a second portion extending upwardly along one side of said seat means and a third portion extending upwardly along a side of said seat means opposite from said one side, first connection means for connecting said first portion of said support with said rigid bottom of said seat means and for shifting the rigid bottom of said seat means relative to said support to change the angular orientation of the rigid bottom of said seat means relative to said support and said base, second connection means for connecting said second portion of said support with said seat means and for enabling the angular orientation of the rigid bottom of said seat means to be changed relative to said second portion of said support, and third connection means for connecting said third portion of said support with said seat means and for enabling the angular orientation of the rigid bottom of said seat means to be changed relative to said third portion of said support, said second and third connection means including means for cooperating with said support and said first connection means to hold said rigid bottom of said seat means in any one of a plurality of angular orientations relative to said support during swinging movement of said seat means relative to said base.

4,240,626

ABDOMINAL WAIST MACHINE

Lloyd J. Lambert, Jr., 1538 College Ave., South Houston, Tex. 77587

Filed Nov. 8, 1978, Ser. No. 958,826
Int. Cl.[3] A63B 21/06
U.S. Cl. 272—118 **4 Claims**



1. An abdominal waist machine comprising a bench, only one padded bar overlying and extending transversely of said bench for receiving the back of the knees of a user, support bars connected at opposed end extremities of said padded bar, said support bars are connected to an axle on opposed sides of said bench carried on a frame means, a cam disposed on each axle and capable of rotating with said axle, a cable connected to each said cam, and variable weights connected to each cable at an extremity remote from said cam in which said weights are constrained to move in a substantially vertical direction whereby when said padded bar is move, said weights will translate in a vertical direction, and resistance in moving said padded bar will vary as a function of the cam and its contour and in which said bench is provided with a back portion capable of angular orientation with respect to a horizontal plane defined by an apertured shaft disposed transverse to and below a longitudinal extent of said back supported on said frame means, an adjusting bar depending from a bottom face of said back portion having plural holes along its length, said adjusting bar slideably disposed in a first said shaft aperture, and a locking pin extendable through one of said holes to lock said shaft to said bar through a second said aperture.

4,240,627

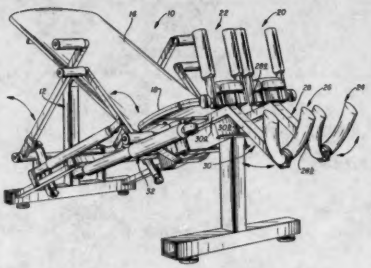
MULTI-PURPOSE EXERCISING DEVICE

Jerry D. Brentham, P.O. Box #599, Belton, Tex. 76513

Continuation-in-part of Ser. No. 790,051, Apr. 22, 1977, Pat. No. 4,185,818. This application Nov. 20, 1978, Ser. No. 962,067
Int. Cl.[3] A63B 21/22
U.S. Cl. 272—130 **10 Claims**

1. An exercising device comprising: a frame having a central axis; body support means on said frame adapted to support a human body such that a median axis of the human body, the axis of the human body lying substantially parallel to the spine, lies parallel to the central axis of said frame; a leg exercising means on each respective side of the central axis pivotally secured to said frame for exercising the legs of the human body when the legs are moved in a lateral direction relative to the central axis; means for resisting movement of said leg exercising means pivotally secured between said frame and said leg exercising means; arm exercising means on each side of the central axis pivotally secured to said frame for exercising the arms of the human body when the arms are moved in a longitu-

dinal direction relative to the central axis; and means for resisting movement of said arm exercising means pivotally secured



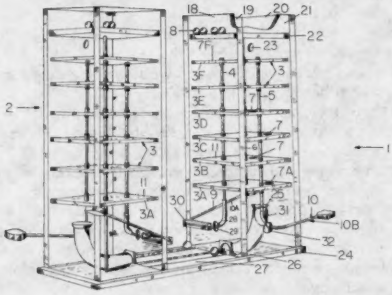
between said arm exercising means and said frame to allow simultaneous movement of said leg exercising means and said arm exercising means.

4,240,628

MANIPULATIVE SKILL GAME

Charles H. Brownfield, 4116B Royce Dr., Alexandria, La. 71301

Filed Sep. 17, 1979, Ser. No. 76,129
Int. Cl.³ A63F *7/38*
U.S. Cl. 273—1 R **6 Claims**



1. A game for manually manipulating balls from one position to another position comprising multi-levels of plates connected separately from one another by first and second manipulating rods fixedly attached to each plate and aligned with respect to one another by an aligning rod, to which each plate is pivotably connected, each plate having at least one opening through which a ball can pass, each of the first and second manipulating rods being pivotedly attached at their lower ends to first and second extension arms, respectively, extending out from said plates a sufficient distance to be manipulated by a person's hand.

4,240,629

TETHERABLE GAME BALL

Jae M. Song, 225/46 Yeunhi/dong, Ma Po/Ku, Seoul, Rep. of Korea, and Samuel B. Ligon, 5505 Emerson, Dallas, Tex. 75209

Filed Jan. 8, 1979, Ser. No. 1,742
Int. Cl.³ A63B *39/00, 43/02*
U.S. Cl. 273—58 C **3 Claims**

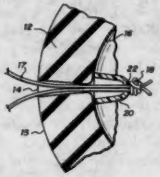
1. A game ball for being secured to a tether comprising:

a resilient spherical hollow ball having an interior surface and an exterior surface and an aperture normal to the exterior surface of said hollow ball and extending from the interior surface to the exterior surface of said hollow ball, said aperture having an inward taper beginning at said exterior surface and extending along at least a portion of the length of said aperture;

a line of predetermined length having two ends that are passed through said aperture, the line ends being secured together in the hollow portion of said ball to form a loop extending exteriorly of said spherical hollow ball for securing the tether thereto;

means for restraining the line from being pulled through said aperture;

means for distributing forces exerted between the line and said hollow ball to prevent tearing of said hollow ball by



the line, said means for restraining and said means for distributing free of fixed attachment to said ball; and

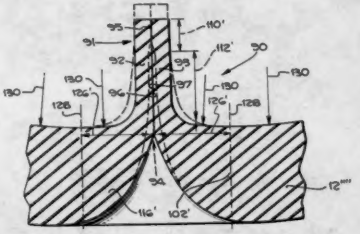
said means for restraining said line from being pulled through said aperture and said means for distributing forces including a rigid plug larger than the diameter of said aperture located entirely within said spherical hollow ball and having a hole extending therethrough with said loop passing through said hole, said rigid plug contacting an interior portion of said spherical hollow ball adjacent said aperture for distributing forces over the area of said ball that said rigid plug contacts when a force is exerted upon said line.

4,240,630

GAME BALL CHECK VALVE

Allan C. Hoffman, 2891 Rumsey Dr., Riverside, Calif. 92506

Continuation-in-part of Ser. No. 777,318, Mar. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 623,795, Oct. 20, 1975, Pat. No. 4,012,041. This application Apr. 10, 1978, Ser. No. 895,117
Int. Cl.³ F16K *15/16*; A63B *39/04*
U.S. Cl. 273—61 R **5 Claims**



1. A unitary check valve for sealing a passageway to allow pressurized fluid to flow axially through the passageway in one direction and prevent pressurized fluid from flowing axially through the passageway in the opposite direction comprising:

(a) an annular body portion carried coaxially within the passageway, said body portion being thick enough in the axial direction adjacent the outer edges of the passageway that in combination with the support provided by the material defining the passageway said portion is substantially non-deformable in the axial direction; and,

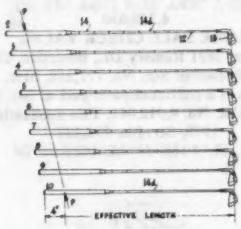
(b) a sealing nipple portion carried within said body portion tapering radially inward and axially in the direction of

desired fluid flow from said body portion on one end to meet in sealed contact adjacent the opposite end, the thickness of said sealing nipple portion in the axial direction becoming increasingly thinner and correspondingly increasingly deformable in the axial direction radially inward from said one end whereby the application of fluid under pressure to said valve in the direction opposite desired fluid flow causes said nipple portion to be deformed axially into said body portion in a wedging action increasingly sealing the passageway as increased fluid pressure is applied, said taper being a smooth curve extending from a point on a line substantially normal to the axis of the passageway on said one end to a point on a line substantially parallel to the axis of the passageway on said other end whereby fluid pressure within the passageway tending to move fluid through the passageway in a non-desired direction acts normal to the axis on said nipple portion adjacent said other end to initially prevent fluid passage therethrough as it also acts axially on the rest of said nipple portion to deform said nipple portion in said wedging action into said body portion, said nipple portion being of a material having the deformion and sealing qualities of soft natural rubber, the surfaces of said nipple portion that meet during said wedging deformation into said body portion having a finish produced by a mirror-smooth mold.

4,240,631
SHAFT ASSEMBLIES FOR GOLF CLUBS

Ian C. MacDougall, 19 Knockbreck Ave., Tain, Ross-shire Scotland (IV19 1LY)

Filed Jun. 13, 1978, Ser. No. 915,192
Claims priority, application United Kingdom, Jun. 25, 1977, 26705/77
Int. Cl.³ A63B *53/00, 53/12*
U.S. Cl. 273—77 A **7 Claims**



CLUB NO	LIE ANGLE	EFFECTIVE LENGTH	CLUB WT	EI VALUE AT 'P'	FREQ MEAS
2	57°	34-87	14-49	17,150	595
3	58°	34-37	14-75	16,850	575
4	59°	33-69	15-00	16,550	525
5	60°	33-13	15-26	16,250	505
6	61°	32-99	15-51	15,950	595
7	62°	32-07	15-76	15,650	505
8	63°	31-56	16-00	15,350	595
9	64°	31-10	16-26	15,050	505
10	65°	30-64	16-50	14,750	575

1. In a set of golf clubs, each said golf club including a tapered handle portion and a tapered tip portion for the attachment of a golf club head thereto, each said golf club further comprising a total weight and an effective length, the improvements therein comprising:

(a) each said shaft is made from substantially identical shaft blanks,

(b) the product of said effective length multiplied by said total weight is kept substantially the same for each club in the set,

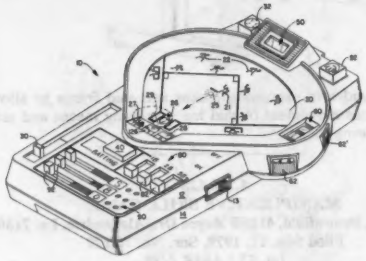
(c) the flexibility of the shafts in said set being determined by a preselected EI value, said EI value steadily reducing from the longest to the shortest club, said EI values occurring on each shaft on said tapered handle portion at a point a predetermined same distance from the end of said handle portion whereby said clubs are provided with matched playing characteristics, and

(d) each said shaft in said set has the same tip diameter.

4,240,632
BASEBALL GAME

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,411
Claims priority, application Japan, Jun. 12, 1978, 53-71156
Int. Cl.³ A63F *7/00, 9/22*
U.S. Cl. 273—88 **8 Claims**



1. A baseball game comprising:

a housing having a transparent face with a replica of a baseball diamond thereon;

a first mechanism contained within said housing for simulating the pitching of a baseball;

a second mechanism contained within said housing for simulating the swinging of a bat;

a third mechanism contained within said housing for indicating any one of a number of baseball hitting and catching situations;

a person operated control for energizing a spring for effecting later operation of the aforesaid mechanisms;

an opponent operated control for initiating said ball pitching simulation first mechanism and another control for effecting stopping of said third mechanism; and

a person operated control for the second mechanism for simulating the swinging of a bat.

4,240,633
GAME HAVING MOVABLE OBJECT AND OBJECT STRIKING MEMBER

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,115
Claims priority, application Japan, Jun. 12, 1978, 53-71156
Int. Cl.³ A63F *7/00, 9/22*
U.S. Cl. 273—88 **23 Claims**

1. A game which comprises:

a housing;

an object means movably mounted in said housing;

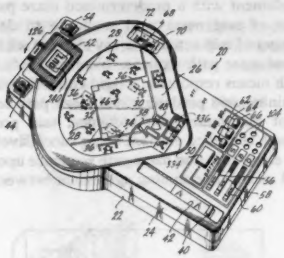
an object moving means mounted in said housing and moving said object means between a first location and a second location and including passing said object means through a strike location intermediate said first and said second locations;

a strike location determining means detecting when said object means is passing through said strike location;

a striking means movably mounted in said housing so as to move between a ready position and a strike termination position;

an activating means for actuating movement of said striking means from said ready position to said strike termination position;

detecting means operatively connected to said strike location determining means and detecting when said object



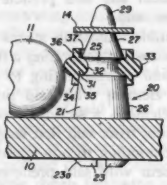
means is passing through said strike location simultaneous with when said striking means is actuated.

4,240,634

ELASTIC BAND FOR PINBALL GAME

Max Wiczer, 9122 Kedvale Ave., Skokie, Ill. 60076

Filed Jan. 15, 1979, Ser. No. 3,116
Int. Cl.[3] A63B 71/00
U.S. Cl. 273—127 R **5 Claims**



1. In a pinball game having a playfield board supporting a rolling pinball thereon, wherein the improvement comprises: a set of annularly grooved posts adapted to project upwardly from the associated playfield board; and an endless elastic band encircling said set of posts under tension, said band including an annular elastic body having an axis extending through the center thereof normal to the radii thereof, an inner annular portion on said body extending radially inwardly thereof and seated in the annular grooves of said posts, and an annular flange portion on said body extending therefrom generally in the direction of said axis coaxially therewith, said flange portion extending downwardly along said posts toward the associated playfield board, whereby said flange serves to inhibit twisting of said band and passage of an associated pinball beneath said band.

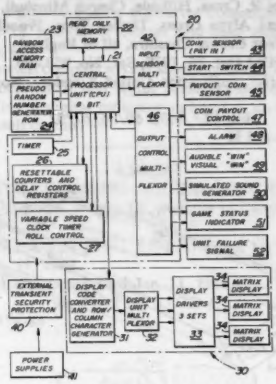
4,240,635

SLOT MACHINE DEVICE

Harry Brown, 2430 Atlantic Ave., Atlantic City, N.J. 08401

Filed Mar. 9, 1979, Ser. No. 19,303
Int. Cl.[3] A63F 5/04
U.S. Cl. 273—138 A **4 Claims**

1. A slot machine device comprising changeable display means, a pseudo random number generator, a microprocessor connected between the number generator and display means for accessing former and controlling the latter to present an apparently randomly selected character, said display means comprising a matrix of activatable display elements arranged in rows and columns, character generator means connected between said microprocessor and display means and controlling activation of said display elements to present a character and to change the activated display elements to present the appearance of a moving character, and a variable speed timer connected to said microprocessor to modify the transfer rate of randomly selected character input signals from the micro-



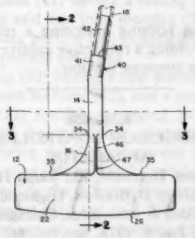
processor to said display element to simulate a decelerating mechanical wheel.

4,240,636

GOLF PUTTER

Ronald F. Swenson, 2719 N. Logrun Cir., Woodlands, Tex. 77380

Filed Dec. 18, 1978, Ser. No. 970,716
Int. Cl.[3] A63B 53/02, 53/04
U.S. Cl. 273—169 **3 Claims**

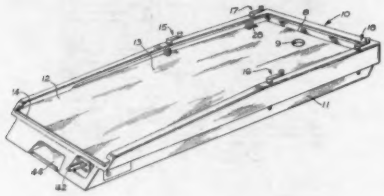


1. A golf putter head having a center axis of symmetry, said head defining a ball-striking face; a heel and a toe extending rearwardly from the opposite sides of the striking face; a sole having a curved surface extending rearwardly from the striking face and forming integral part with the heel and toe; a bridge part spanning between the striking face, the heel and the toe, said toe and said heel being weighted, whereby the center of gravity of said putter is substantially symmetrically located behind said striking face; a shank extending upwardly and being disposed along said center axis; a neck coupling said shank with said bridge part; a shaft-receiving hosel extending upwardly from said shank; said striking face, sole, heel and toe form an open recess therebetween and said recess extends over the majority surface of said striking face; and said striking face being integral and continuous with said sole and said bridge part.

4,240,637
PUTTING PRACTICE APPARATUS

Robert Cross, 89 Wybunbury Rd., Wistaston, Nantwich, Cheshire; Terrence R. Cross, Hillside, Church Minshull, Nantwich, Cheshire, and Alvan Cross, Timber Tops, Woodland Hills, Madeley, Near Crewe, Cheshire, all of England

Filed Oct. 23, 1978, Ser. No. 953,690
Claims priority, application United Kingdom, Nov. 9, 1977, 46590/77
Int. Cl.[3] A63B *69/36, 67/02*
U.S. Cl. 273—176 H 1 Claim



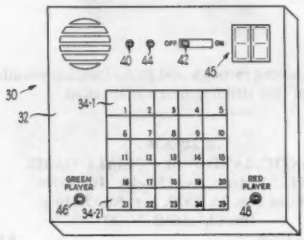
1. Putting practice apparatus comprising:
a frame,
a planar deck supported by the frame and having an apertured upper surface defining a putting surface,
a plurality of spaced vertically-extending turnable threaded bolts for varying the height of at least a part of the deck and the magnitude of the slope of the deck upper surface,
the deck having a degree of deformability for allowing its contour to be varied by the changing of the height of at least one region thereof,
a plurality of spaced C-shaped locator brackets fixed to the frame and supporting a respective one of the bolts extendable therethrough,
at least one of the locator brackets being adjustable in height,
a cranklike handle attached to each bolt for permitting bolt rotation in the height adjustment function,
the deck being provided with a plurality of cutaway portions along the side edges thereof,
a captive nut being nestably receivable within each cutaway portion and threaded on the respective bolt extendable therethrough,
an encapsulating housing enclosing a respective cutaway portion and holding a respective captive nut in situ within the respective cutaway portion.

4,240,638
MICROPROCESSOR CONTROLLED GAME APPARATUS

Howard J. Morrison, Deerfield, Ill.; Ralph H. Baer, Manchester, N.H., and Jeffrey D. Breslow, Highland Park, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 6, 1978, Ser. No. 867,583
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—237 22 Claims

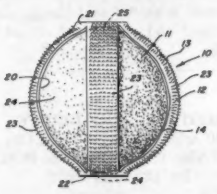
1. An electronic game device comprising:
a base;
a playing field array defined on said base and including a plurality of array elements defining a respective plurality of playing field array positions, each of said array elements being manually actuatable by a participant for entering the respective playing field array position represented by each of said array elements;
means having stored therein an internally generated maze path sequence including maze path sequence elements, each of said maze path sequence elements corresponding to a respective one of said array positions in said maze path sequence corresponding to a predetermined maze path on said playing field array in terms of said array positions;
entry control means responsive to actuation of said array elements for determining the relative position of said actuated array elements in said playing field array and for comparing the relative array position of said actuated array element with a predetermined maze path sequence element of said maze path sequence to determine the agreement of said actuated array element with said predetermined maze path sequence element;
maze path means responsive to said entry control means for determining said predetermined maze path sequence element of said maze path sequence, said predetermined maze path sequence element being successively increased by one element in said maze path sequence upon said entry control means determining agreement between said actuated array element and said predetermined maze path sequence element; and
sensorially perceptible indicating means responsive to said entry control means for generating a first sensorially perceptible indication corresponding to agreement of said actuated array element with said predetermined maze path sequence element, a second sensorially perceptible indication different from said first sensorially perceptible indication corresponding to non-agreement of said actuated array element with said predetermined maze path sequence element, and a third completion of game indication corresponding to the agreement of said actuated array elements and the last sequence element of said maze path sequence.



4,240,639
TOSS BALL CONSTRUCTION

Douglas R. Bolton, Chicago, Ill., and John M. Werling, Kansas City, Mo., assignors to Cadaco, Inc., Chicago, Ill.

Filed May 4, 1979, Ser. No. 36,250
Int. Cl.[3] A63B *65/00*
U.S. Cl. 273—346 10 Claims



1. In a ball adapted to cling to a textile surface as an incident of being tossed thereagainst, the ball including a lightweight spherical body, the improvement comprising
a sheet of flexible Velcro fabric affixed to said body and having spread parallel slits defining therebetween longitudinal strips having a first end joined by a first end wall extending polygonally about one portion of the spherical body and an opposite end joined by a second end wall extending polygonally about a diametrically opposite portion of the spherical body, each of said end walls pro-

jecting outwardly from the surface of the spherical body and forming strong interconnections between said strips.

4,240,640

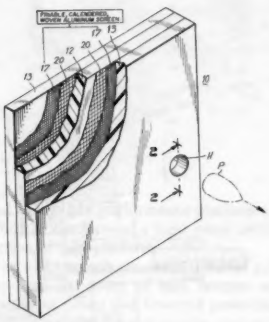
PROJECTILE PENETRATION RESPONSIVE ELECTRICALLY SHORTING TARGET

Joseph L. LaMura, West Caldwell, N.J., assignor to Joanell Laboratories, Inc., Livingston, N.J.

Filed Sep. 7, 1978, Ser. No. 940,348

Int. Cl.³ F41J *5/04*

U.S. Cl. 273—373 **10 Claims**



9. A projectile penetrating sensing target comprising a first sheet of an electrically insulating cellular polymeric resin and a pair of panels disposed along the opposite faces of and sandwiching said first sheet and being secured thereto, each of said panels including an electrode defining electrically conducting metal sheet, at least one of said metal sheets comprising a woven, friable metal wire screen and being suffiently friable to shatter to a divided state in the area of impact by a projectile penetrating said target and obviate physical contact between said electrode defining sheets following said projectile penetrating said target.

4,240,641

RECORD PLAYER

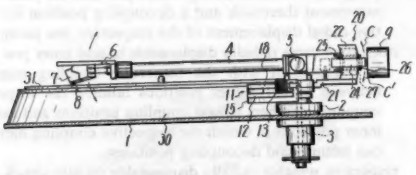
Shuichi Kimura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,991

Claims priority, application Japan, May 8, 1978, 53-54308; Oct. 27, 1978, 53-132394

Int. Cl.³ G11B *3/10*

U.S. Cl. 274—23 R **9 Claims**



1. A record player comprising:

a tone arm having a stylus;

electro-magnetic means for moving said tone arm in the vertical direction with respect to a record surface;

a drive circuit connected to said electro-magnetic means;

adjusting means connected to said drive circuit for varying a current flow through said electro-magnetic means so as to vary the stylus pressure on said record surface, said adjusting means including a variable resistor, an analog-to-digital converter for converting a voltage derived from said variable resistor into a digital value, a latch circuit connected to said analog-to-digital converter, a detector circuit connected between said latch circuit and said variable resistor for detecting the absence of any change in the level of the voltage derived from said variable resistor, and a digital-to-analog converter connected between an output of said latch circuit and said electro-magnetic means; and

display means coupled to said adjusting means for displaying an indication of said stylus pressure, said display means including a digital indicator connected to the output of said latch circuit.

4,240,642

BELLEVILLE SPRING-LOADED CRESCENT SEAL

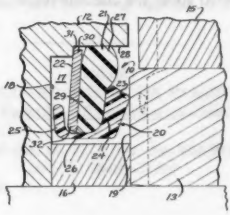
Michael A. Roussin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 80/00022, § 371 Date Jan. 11, 1980, § 102(e) Date Jan. 11, 1980

This PCT application filed Jan. 11, 1980, Ser. No. 133,632

Int. Cl.³ F16J *15/32, 15/34*

U.S. Cl. 277—84 **16 Claims**



1. In a joint **(11)** having a first member **(12)** and a second member **(13)** variably spaced from said first member, improved sealing structure **(10)** for providing a seal between said members across the variable space therebetween, said sealing structure comprising:

a dynamic seal element **(20)** having a lip portion **(23)** sealingly engaging said second joint member **(13)**, and a load portion **(24)**;

a static seal element **(21)** having a sealing portion **(27)** sealingly engaging said first joint member **(12)** and a deflectible force transfer portion **(29)** engaging said dynamic seal element load portion **(24)**; and

a Belleville spring **(22)** having a first portion **(30)** positioned by said first joint member **(12)**, and a second force-applying portion **(32)** forcibly engaging said force transfer portion **(29)** of the static seal element **(21)**, a dynamic sealing force being developed between said dynamic seal element lip portion **(23)** and said second joint member **(13)** and a static sealing force being developed between said static seal element **(21)** and said first member **(12)** as an incident of the spring force transfer through said static seal element deflectible force transfer portion **(29)**.

4,240,643

ANNULAR SEAL

Bernd Becker, Leimen; Hans Forch, Birkenau; Adam Helfrich, Waldmichelbach, and Gottfried Jung, Fürth, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,726

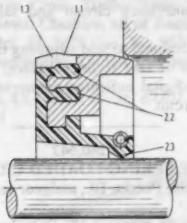
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743501

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—164 **6 Claims**

1. An annular seal comprising an annular elastomeric lip member having at least one annular rim and an annular reinforcing member for said lip member, said reinforcing member having an end face provided with a groove in which said rim is held, at least the portion of the reinforcing member that is

spaced from the groove being of flexible compressible construction and being of a diameter adjacent the groove which in uncompressed state is greater than the diameter when installed



in operative position, the portion of the reinforcing member lying outside of the groove being provided with a plurality of slits dividing that portion into a plurality of segments uniformly distributed about the circumference.

4,240,644

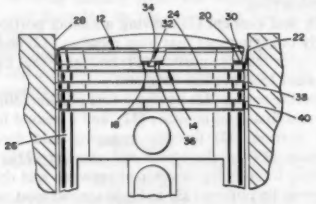
PISTON SEAL

Jerry T. Busto, Lakewood, Colo., assignor to Gemini Seals, Inc., Lakewood, Colo.

Filed Apr. 27, 1977, Ser. No. 791,540

Int. Cl.³ F16J 9/02

U.S. Cl. 277—194 **26 Claims**



1. A piston seal for use in sealing a piston reciprocating in a cylinder of an internal combustion engine comprising cooperating first and second sealing rings adapted to seat in a common piston ring groove in stacked relationship with one another, said first ring having a thickness substantially less than said second ring and approximately between 0.005 and 0.030 inches, having a radial spring tension biasing it radially toward contact with a cylinder bore and having a radially extending portion seatable in a ring groove and an axially extending flange portion forming the outer periphery of said first ring such that it is exposed, when operating, to fluid under pressure in a cylinder which forces said axial portion radially into sealing engagement with a cylinder bore and said second ring having radial spring tension biasing it radially toward contact with a cylinder bore, and said second ring having a relatively greater thickness than said first ring and having a rectangular cross-section and disposed beneath said first ring to thereby support said first ring during operation.

4,240,645

FORCE-COMPENSATED SPLIT-JAW LATHE CHUCK

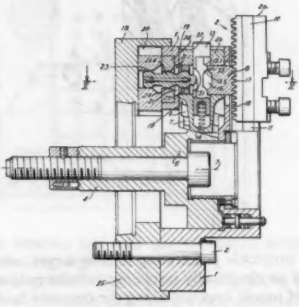
Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 40,128, May 18, 1979. This application Jul. 20, 1979, Ser. No. 59,145

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832297; Aug. 18, 1978, 2836191; Oct. 17, 1978, 2845133

Int. Cl.³ B23B 31/16

U.S. Cl. 279—1 C **10 Claims**



1. A lathe chuck comprising:

a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extendng outer guides;

respective inner and outer jaw parts radially displaceable in said chuck body in said inner and outer guides;

means including at least one operating element engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;

respective coupling members axially displaceable in said inner jaw parts and each displaceable between a coupling position engaging the respective outer jaw part and coupling same to the respective inner jaw part for joint radial movement therewith and a decoupling position for relative radial displacement of the respective jaw parts;

respective cams radially displaceable in said inner jaw parts in engagement with the respective coupling members between radially outer positions holding the respective coupling members in said coupling positions and radially inner positions in which the respective coupling members can assume said decoupling positions;

respective weights radially displaceable on said chuck body adjacent said inner jaw parts;

respective levers centrally fulcrumed in said body and having axial back ends in radial force-transmitting engagement with said weights and axial front ends in radial force-transmitting engagement with the respective inner jaw parts, said levers being pivotal on said body first-class fashion with opposite radial displacement of the respective ends; and

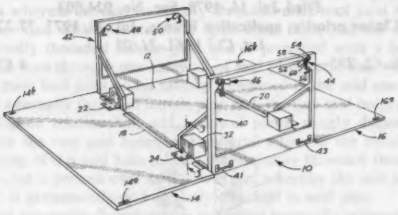
respective means for connecting said levers for going axial displacement with the respective coupling members, said levers being axially limitedly displaceable relative to the respective weights and to said body.

4,240,646

COMBINED DRUM-SET CARRIER AND PERFORMANCE PLATFORM

Donald C. Scott, 114 Baker Creek Rd., McMinnville, Oreg. 97128

Filed Jan. 25, 1979, Ser. No. 6,295
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—30 **3 Claims**



1. A combined carrier and performance platform comprising

a bottom section in the form of a rigid panel which forms a central portion of said platform,

a pair of side memebers each also in the form of a rigid panel attached to opposite sides of said bottom section for swinging between raised and lowered positions, wherein said members form sides for said carrier, and coplanar side portions for said platform, respectively, and

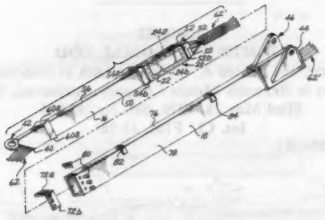
roller support means rigidly connected directly to said side members for shifting between exposed and concealed conditions with shifting of said side members between their said raised and lowered positions, respectively, said roller support means when in its said exposed condition providing ground-contacting rolling support for said bottom section and side members.

4,240,647

PRESSURE-OPERATED FRICTION LOCKING APPARATUS FOR SLIDABLY ADJUSTABLE TRUCK TRAILER COUPLING

Milburn Lewis, 18418-94th Ave. NE., Bothell, Wash. 98011

Filed Feb. 16, 1979, Ser. No. 13,195
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—482 **16 Claims**



1. In an adjustable coupling apparatus for coupling a trailer to a truck and including first and second elongate, slidably engaging members that allow for adjustment of the coupling apparatus, and incorporating a releasable locking mechanism for selectively restraining such members against relative sliding movement, the improvement in said locking mechanism comprising:

friction shoe means mounted on the first member for transverse movement with respect thereto into frictional contact with the second member;

fluid pressure actuator means for selectively displacing said friction shoe in said transverse movement, wherein said actuator means comprises a hydraulic fluid actuator and has a pressurized condition in which it forces said friction shoe means into said frictional contact with the second member so as to frictionally lock said members against relative sliding movement, and has an unpressurized condition relieving said friction shoe means from said frictional contact with the second member so as to allow said relative sliding movement of said members; and

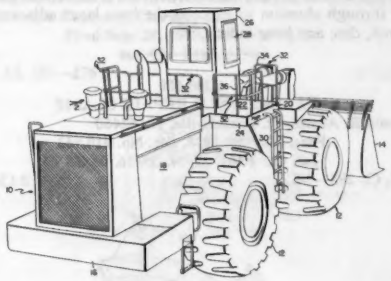
fluid control means including means for selectively applying a pressurized hydraulic fluid to said hydraulic fluid actuator for selectively causing said actuator means to selectively assume either said pressurized condition or said unpressurized condition, wherein said fluid control means includes means for converting pressurized air into pressurized hydraulic fluid for being applied to said hydraulic actuator.

4,240,648

SAFETY GUARD FOR WORK PLATFORMS

Darrel N. Starr, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 11, 1977, Ser. No. 814,597
Int. Cl.³ B60R *21/00*
U.S. Cl. 280—760 **24 Claims**



1. A guard and protective handrail assembly adapted for mounting on a work platform to afford protection and convenience to persons while on said platform, said handrail assembly including a framework with at least one side member having a base end attachable to the platform, said side member extending vertically upwardly from said platform, said platform including a substantially flat top and a depending peripheral skirt, said top having a slot therethrough disposed inward of said skirt, said side member being a tube having said base end thereof flattened, inserted in, and extended through said slot, and means fixedly attaching said flattened extended end to the underside of said platform and interiorly of the peripheral skirt, the attachment to the platform being disposed within the confines of the external perimeter of the platform and thereby preventing contact with objects external to the platform, or with a person on the work platform.

4,240,649

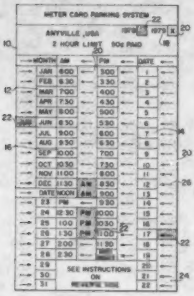
METER CARD PARKING SYSTEM

Herb Weber, 12 Copper Beech Pl., Merrick, N.Y. 11566

Filed Sep. 18, 1978, Ser. No. 943,129
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—13 **4 Claims**

1. A vehicle parking ticket comprising a card, a series of

indicia indicating month printed on said card, first laminated card activating area means disposed adjacent each of said series of month indicating indicia, a series of indicia indicating day of the month printed on said card, a second laminated card activating area means disposed adjacent each of said series of day indicating indicia, a series of hour indicating indicia, a third laminated card activating area means disposed adjacent each of said series of hour indicating indicia, said first, second and third



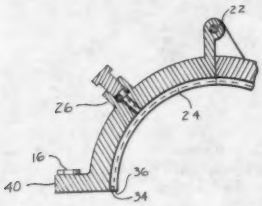
laminated card activating area means comprising a base layer containing the card face bearing indentification means printed thereon, a coating material superimposed on said base layer, said coating material adapted to be destroyed by abrasion and a design layer printed on said coating material, whereby the ticket is used by destroying the design layer and coating material through abrasion to exposed the base layer adjacent the month, date and hour indicia.

4,240,650

LEAKING WELD REPAIR CLAMP

Harold R. Adams, St. Francisville, Ill. 62460

Filed May 26, 1978, Ser. No. 910,132
Int. Cl.³ F16L *17/04, 55/16, 55/18*
U.S. Cl. 285—10 **3 Claims**



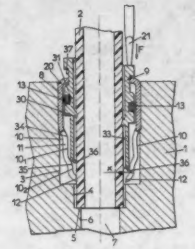
1. A clamp assembly for sealing a leaking weld and the circumferential joint between a pair of butted together pipe flanges, said clamp comprising a collar consisting of a plurality of arcuate segments adapted to be fitted around said pipe flanges, connecting means for connecting said segments around said flanges in butted relation at opposed ends of said segments, each of said segments having an inner circumferential wall provided with a main annular groove adapted to fit in registry with a joint between the pipe flanges, means for filling said groove with a fluid sealant under pressure comprising a fluid sealant filling communicating with said groove, said segments being further provided with a pair of annular border grooves on opposite sides of said main groove, and groove means in end walls of opposite segments connecting said main groove and said border grooves to provide a sealing means between said opposed end walls, said butted together segments having opposed radially extending butted together end walls provided with transverse grooves communicating the main groove with said border grooves, said main groove having a greater depth and width than said border grooves.

4,240,651

COUPLING SYSTEMS FOR CONDUITS, PARTICULARLY FOR SEMI-RIGID PLASTIC TUBES

Claude Mariaulle, Le Palais sur Vienne, France, assignor to Automatisation-Sogemo, Saint-Junien, France

Filed Jul. 14, 1978, Ser. No. 924,803
Claims priority, application France, Jul. 20, 1977, 77 22290
Int. Cl.² F16L *21/02*
U.S. Cl. 285—39 **4 Claims**



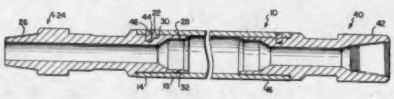
1. In a coupling system for coupling semi-rigid plastic tubes in which two ring members are provided one within the other, the outer ring member being adapted to be secured in sealing engagement in a bore within a part to which the tube is to be connected, said outer ring member having a plurality of teeth extending lengthwise of a tube inserted into said outer ring member, said teeth terminating in claws engageable with the outer wall of a tube inserted into said outer ring member, the inner ring member being movable axially within the outer ring member and having an end portion engageable with said teeth to effect disengagement of said teeth from a tube by axial movement of said inner ring member within said outer ring member in combination with first and second distinct sealing means for sealing the inner ring member and, respectively, a semi-rigid plastic tube and the outer ring member the improvement comprising an integral annular projection having a rounded contour provided on the inner surface of said inner ring member used as the first sealing means, the inner diameter of said projection being slightly smaller than the outer diameter of a tube inserted therein whereby the projection penetrates into the wall of an inserted semi-rigid plastic tube without embedding in the wall, said second sealing means comprising a toroidal sealing member positioned between the inner and outer ring members, and mounted for axial movement with said inner ring member, said first and second sealing means moving axially with said inner ring member.

4,240,652

LIGHTWEIGHT DRILL ROD

Lip F. Wong, and Benton A. Whiteman, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 24, 1979, Ser. No. 42,015
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—91 **1 Claim**



1. In an improved lightweight section of drill rod, which is

adapted to be coupled with like sections of drill rod in making up a drill string for use with oil well drilling rigs or the like, said section of drill rod being of the type which comprises a length of hollow cylindrical pipe made of aluminum or an aluminum alloy, where said pipe has an internally threaded female end, and a hollow steel tool joint attached to the said end of said pipe, said tool joint having an externally threaded male end which is disposed in mating engagement within the said internally threaded female end of said pipe; the improvement wherein the said externally threaded male tool joint end is provided with an outwardly open blind hole, and the said internally threaded female pipe end is provided with a hole which runs through one sidewall of said pipe, such that when said male tool joint end is matingly engaged in the said associated internally threaded female pipe end, the two said holes are in aligned relationship, and a dowel pin is snugly disposed within the two said holes, and material adjacent the exterior opening of the said hole in the said internally threaded female pipe end is peened over said dowel pin, whereby the said tool joint is permanently and securely attached to said pipe;

said internally threaded pipe end being internally relieved at its extreme end portion by an amount corresponding approximately to the height of the threads therein, and the said tool joint having an annular shoulder which mates with the said extreme end portion of said pipe when said pipe and said tool joint are matingly engaged, and said tool joint being torqued down into the said pipe end such that the said extreme end portion of said pipe carries a compressive load;

the internal threads in said pipe end and the external threads of said tool joint end being ASA 60° stub threads and a thread locking compound having been applied to said internal and external threads and to said dowel pin;

said pipe being an extrusion made of 2014 aluminum alloy in T6 temper, and said tool joint being made of SAE 4150 steel with a Brinell hardness in the range of 293 to 321;

said section of drill rod being of the type adapted for use in combination with a carousel type drilling rig and drill rod storage apparatus; and

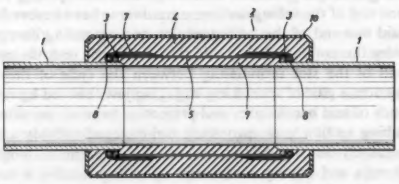
said male tool joint end having a hollow bore which increases in inside diameter toward its said externally threaded male end, and the extreme end portion of said externally threaded male tool joint end being provided with an internal chamfer of about 18°.

4,240,653

FLEXIBLE EXPANSION JOINT

Masahiro Ishigaki; Tadayoshi Ohira, both of Ibaraki; Kanji Fujita, Takarazuka, and Shin-ichiro Nomura, Takatsuki, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Nov. 2, 1978, Ser. No. 957,085
Claims priority, application Japan, Nov. 7, 1977, 52/133868
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—235 **10 Claims**



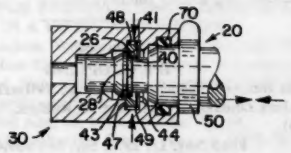
1. A flexible expansion joint, comprising: a pair of coaxial pipes defining joint portions, the adjacent ends of said pipes being axially spaced-apart from one another; an annular, circumferentially extending, stop ring secured to the outer surface of each of said pipes at a location close to said adjacent end thereof so as to protrude radially from said pipe around the circumference thereof; a tubular, flexible body coaxial with said pipes and having its opposite axial end portions sleeved on the outer surfaces of the adjacent ends of said pipes and extending axially outwardly beyond said stop rings, said body being affixed to said pipes and defining an internal, cylindrical, circumferentially closed zone between the adjacent ends of said pipes, said body having at least one annular, coaxial ply of bias cord reinforcement and at least one annular, coaxial ply of circumferential cord reinforcement disposed radially inside of said ply of bias cord reinforcement, said ply of bias cord reinforcement comprising two superposed bias cord lamina the cords of which extend at mutually opposite bias angles which bias angles are in the range of from 10° to 45° relative to the circumferential direction of said body, the opposite axial ends of said ply of bias cord reinforcement being affixed to said stop rings so that said ply of bias cord reinforcement extends axially between said stop rings, said ply of circumferential cord reinforcement comprising one ply cord which extends at an angle in the range of from 0° to 25° relative to the circumferential direction of said body, said ply of circumferential cord reinforcement extending axially between said stop rings, said tubular flexible body including an inner annular rubber layer located inside said ply of circumferential cord reinforcement and an outer annular rubber layer surrounding said ply of bias cord reinforcement, said inner and outer rubber layers being united by vulcanizing to form an integral tubular flexible body in which said ply of circumferential cord reinforcement and said ply of bias cord reinforcement are embedded between said inner and outer rubber layers.

4,240,654

HOSE END COUPLING UNIT

Dennis M. Gladieux, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 79,755
Int. Cl.[3] F16L *27/00*
U.S. Cl. 285—276 **8 Claims**



1. A hose end coupling unit, comprising:

a plug member having a leading cylindrical pilot portion end;

a socket member having axially spaced apart first and second cylindrical internal grooves around a cylindrical bore means for receiving the plug member, the first internal groove forming axially spaced innermost and outermost shoulders of different diametrical size with two bores of the bore means having different internal diameters;

an expandable interconnecting snap ring means sleeved over the pilot portion end of the plug member in an unexpanded state;

a flaring cam means including a cylindrical cam dwell portion at the enlarged flared end of the cam means on the plug member for expanding the interconnecting snap ring means into the first internal groove between the innermost and outermost shoulders, the outermost shoulder and the respective one bore having a circular opening of a size axially admitting the interconnecting snap ring means sleeved on the pilot portion end of the plug member and the innermost shoulder and the respective second bore having a circular opening of a size axially admitting the cam means and the cam dwell portion and barring the interconnecting snap ring means on the pilot portion end thereby forcing the interconnecting snap ring means to slideably expand over the cam means and into the first

internal groove and slide onto the cam dwell portion upon continued axial movement of the cam means deeper into the second bore;

the cam dwell portion having a trailing diametrically inwardly stepped cylindrical edge portion forming a radially outwardly extending shoulder means for preventing the expanded interconnecting snap ring means from returning to the pilot portion end after sliding over the cam dwell portion and snapping onto the shoulder means, the cylindrical bottom of the shoulder means of a diametrical size holding the interconnecting snap ring means thereon in the expanded state in the first internal groove between the innermost and outermost shoulders;

the plug member having first and second external cylindrical grooves, the first external groove located adjacent the shoulder means and diametrically inwardly thereof and having an axial width and cylindrical size sufficient for confining and permitting the interconnecting snap ring means to contract therein to the unexpanded state upon further axial movement of the cam means deeper into the second bore whereby the innermost shoulder barring the interconnecting snap ring means and forcing it off of the shoulder means and into the first external groove thereby unlocking the plug member from the socket member and permitting withdrawing the plug member from the socket member;

a removable spacer snap ring means carried in the second external groove in the plug member located outside of the interlocked plug and socket members for locking the plug member against the further axial movement of the cam means deeper into the second bore thereby preventing the forcing of the interconnecting snap ring means off of the shoulder means and into the first external groove;

means for removing the spacer snap ring means from the second external groove preparatory to push-pulling the plug member out of the socket member; and

an O-ring seal carried in the second internal groove sealingly engaging a trailing cylindrical end portion of the plug member and sealing the bore means.

4,240,655

PIPE COUPLING

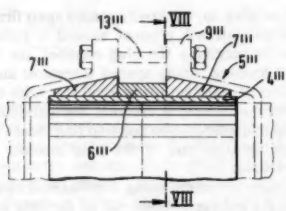
Andreas Rascher, Tannengut 2, Aarau, Switzerland (CH 5000), and Jürg Zbinden, Worbstrasse 45, Rubigen, Switzerland (CH 3113)

Filed Nov. 13, 1978, Ser. No. 959,421

Claims priority, application Switzerland, Nov. 17, 1977, 14036/77

Int. Cl.³ F16L *21/00*

U.S. Cl. 285—323 **6 Claims**



1. A coupling for abutting end portions of two at least substantially coaxial pipes, comprising a tubular inner jacket of cylindrical cross section; an outer jacket axially slidable onto said inner jacket and including two parts having respective conical surfaces which converge toward mutually spaced ends of said outer jacket, said parts having slots which extend in parallelism with the axis of the pipes over at least a predominant portion of the lengths, and are uniformly distributed over the peripheries, of said parts of said outer jacket and subdivide the latter into ring segments, and easily deformable webs extending transversely of said slots and interconnecting said ring segments, said outer jacket having a thickness exceeding that of said inner jacket at least at the mutually facing ends of said outer jacket parts; flanged clamping rings shiftable onto said outer jacket and having conical inner surfaces contacting and acting on said conical surfaces of said outer jacket parts; and means for drawing said clamping rings toward one another axially of the pipes to predominantly elastically deform said outer jacket and predominantly plastically deform said inner jacket.

4,240,656

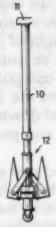
APPARATUS FOR RETRIEVAL AND DISPOSAL OF ANIMAL EXCREMENTS

Karlheinz Eiffinger, Piccolomínistr. 308, 5000 Köln 80, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,867

Int. Cl.³ A01K *29/00*; A47L *13/52*

U.S. Cl. 294—1 BA **18 Claims**



9. A device for the retention and disposal of animal excrement, comprising:

at least two separate scoops,

each scoop having a removable and disposable lining, each lining conforming to the interior shape of the respective scoop, and

common support means for rotatably supporting said scoops, each scoop separately and independently rotatable with respect to said common support means between an excrement retaining orientation associated with said scoop and an excrement disposal orientation associated with said scoop.

4,240,657

LOG LIFTER

James M. Feighery, 716 Mt. Sinai Rd. South, Dalton, Ga. 30720

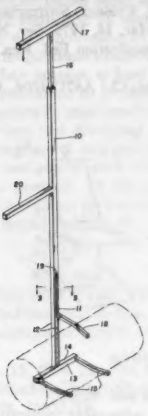
Filed Feb. 5, 1980, Ser. No. 118,844

Int. Cl.³ A47J *49/14*

U.S. Cl. 294—11 **5 Claims**

1. A log lifter comprising a straight tubing section which is elongated and provided with a side wall slot opening through one end of the tubing section, a transverse bar member fixed to said one end of the tubing section and extending on opposite sides thereof and closing said slot at said one end, the opposite end of the slot terminating between the ends of the tubing section, a pair of spaced log engaging jaws carried by opposite ends of said bar member and projecting beyond one side of the tubing section, a reciprocating rod engaged slidably and non-rotatably in the tubing section for movement lengthwise therein and having a rear end operating handle, a coacting operating handle on the tubing section between the opposite ends of the same, and a single log engaging jaw secured to the end of said rod adjacent to the bar member and away from the operating handle of the rod and projecting through said slot and arranged in opposed relation to and substantially midway between the jaws of said pair, said single jaw being shiftable through said slot longitudinally and the opposite closed ends of the slot limiting movement of said single jaw with said rod and

rod operating handle forwardly and rearwardly relative to the tubing section, and the engagement of said single jaw in said



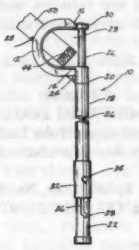
slots maintaining the tubing section and said rod in permanently assembled non-rotational relationship.

4,240,658

TRUSS LIFTING HOOK AND METHOD FOR USING SAME

Stanley Britson, White Fox Rd., Webster City, Iowa 50595

Filed Jan. 28, 1980, Ser. No. 116,041
Int. Cl.³ B25J *1/00*
U.S. Cl. 294—19 R **13 Claims**



1. An apparatus for lifting a truss including a plurality of interconnected beams, said apparatus comprising,

a generally U-shaped hook adapted to receive one of said truss beams therein, said hook including spaced apart opposite ends,

an elongated shaft having a hook end and a handle end, said hook end being connected to one end of said hook,

a rod connected to said shaft for longitudinal sliding movement therealong between a first position wherein said rod is substantially clear of the space between opposite ends of said hook so that a truss beam may be received therein and a second position wherein said rod extends substantially across said space whereby withdrawal of said beam between said opposite ends is prevented,

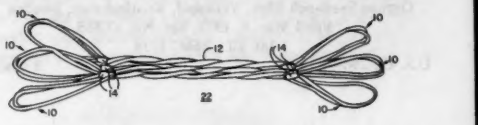
said rod being substantially co-extensive with said shaft such that the rod may be manipulated adjacent the handle end of said shaft for movement between said first and second positions.

4,240,659

HEAVY DUTY SLING CONSTRUCTION

Dennis St. Germain, Wilmington, Del., assignor to I & I Sling Company, Inc., Aston, Pa.

Filed Sep. 11, 1978, Ser. No. 940,944
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **7 Claims**



1. A flexible load carrying apparatus which comprises first and second slings wherein each sling is a three body part sling constructed of a single length of flexible cable and includes:

a body having three intertwined sections of said cable; and

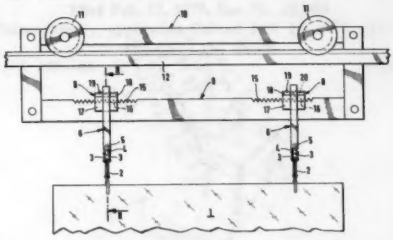
an eye at each end of said body, each eye including two intertwined sections of said cable, each eye having at its juncture with said body an end of said cable, said ends being secured to a body section of said cable by a sleeve, said sleeve each thereby securing only two sections of said cable, and wherein said bodies of said first and second slings are intertwined and maintained intertwined by maintaining means which include the engagement of said sleeves, on a random basis, with adjacent sleeves and cables, said sleeves fitting into interstices there between thus forming an interlocking relationship, said maintaining means permitting said apparatus to be easily and readily engaged and disengaged from said slings.

4,240,660

APPARATUS FOR TRANSPORTING SHEETS OF GLASS IN A VERTICAL POSITION

Mario Roth, Aachen; Werner Pagel, Herzogenrath; Günther Schmidt, Aachen-Richterich, and Laurenz Hausmann, Gangelt, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Aug. 10, 1979, Ser. No. 65,734
Claims priority, application France, Aug. 11, 1978, 78 23709
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—81 R **5 Claims**



1. Apparatus for transporting sheets of glass in a vertical position having tongs adapted to engage a sheet of glass, a first strap having a support face operatively connected to said tongs and a trolley supported first beam having a support face from which said first strap is suspended, the improvement comprising in that the support face of said first strap and the support face of said first beam are each provided with a plurality of teeth wherein the pitch of the teeth associated with the first beam differs from the pitch of the teeth associated with the first strap, and a first differential block having a plurality of upper teeth corresponding in shape and pitch to the teeth associated

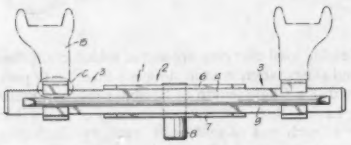
with said first strap and a plurality of lower teeth corresponding in shape and pitch to the teeth associated with the first beam whereby when said first differential block is inserted between the support faces of the first beam and the first strap, the first strap will be adjustably suspended from the first beam.

4,240,661

YOKE

Hans Ögren, Kristinehamn, Sweden, assignor to Aktiebolaget Ögrens Svets-och Mek. Verkstad, Kristinehamn, Sweden

Filed Mar. 6, 1979, Ser. No. 17,855
Int. Cl.[3] B66C 1/34
U.S. Cl. 294—82 AH 5 Claims



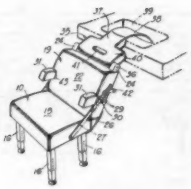
1. Yoke designed in each end to be provided with an up-right lifting fork or other support for an object to be lifted, particularly a yoke for lifting motor-cars by applying the lifting forks under an axle of the car or under other suitable lifting point and thereafter pushing the yoke upwards, characterized in that the yoke has two end portions in each of which is provided a sleeve for journaling a shaft bar of said lifting fork or corresponding support, each end portion being designed as an open box formed of two longitudinal, vertical side plates and at least one vertical end plate, said sleeve extending through said open box and having an outer diameter which is somewhat smaller than the distance between the vertical side plates, so that the sleeve may be displaced in the box between two end positions, said sleeve being securably adjustable in different positions between the end positions.

4,240,662

FOLDING SHAMPOO CHAIR

Bernice J. Anderson, 1805 Shirley St. SW., Atlanta, Ga. 30310

Filed Aug. 10, 1979, Ser. No. 65,445
Int. Cl.[3] A47C 1/04, 4/00
U.S. Cl. 297—17 9 Claims



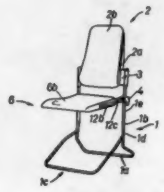
1. A folding shampoo chair comprising a seat having a bottom storage recess and a back hinged to the seat and having a rear storage recess, legs pivotally attached to the seat and being swingable to stowed positions within said recess of the seat, arm rests and a combined shoulder and head rest pivoted on said back and being swingable to stowed positions within the recess of the back, and said seat and back being swingable to folded positions with the recesses of the seat and back in opposing relationship with said legs, arm rests and shoulder and head rest therein.

4,240,663

ADJUSTABLE STACKING CHAIR

Hermann Locher, Pfeffingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland

Filed Mar. 14, 1979, Ser. No. 20,546
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 7830726[U]
Int. Cl.[2] A47C 3/04, 3/34
U.S. Cl. 297—239 3 Claims



1. A chair, comprising:

a frame;

a backrest fixed to said frame;

a pair of casings adjustable vertically on said frame and adapted to adjust the vertical height of said backrest and to be locked into position at a desired vertical height on said frame;

a pair of substantially parallel first seat support tubes, each of said first seat support tubes extending forwardly from one of said casings and being pivotally secured to said one of said casings by a hinge pin, said pair of first seat support tubes being adapted to be pivoted into a vertical position about said hinge pins;

a transverse member rigidly interconnecting said pair of first seat support tubes;

a seat disposed on said first seat support tubes and adapted to be moved in an axial direction along said pair of first seat support tubes; and

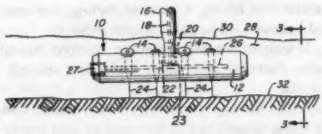
linear displacement means connected to said seat and disposed beneath said seat between said seat and said transverse member and adapted for axial adjustment of said seat.

4,240,664

HYDRAULIC JET CUTTING TOOL AND METHOD

Anil Mahyera, New Dundee, and John Duff, North Bay, both of Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 8, 1978, Ser. No. 940,803
Int. Cl.[3] E21C 25/60
U.S. Cl. 299—17 31 Claims



1. In a fluid jet cutter means for forming an elongated kerf in a formation, a nozzle means comprising: an elongated body member; said body member including a plurality of jet nozzle portions spaced longitudinally thereof and adapted to produce respective liquid jets each of sufficient intensity to free surface material from such a formation by jet impingement cutting action upon a surface portion of such formation when said jet nozzle portions are located within a maximum standoff distance from such surface portion; said nozzle means including cutter bit means spaced longitudinally of said body for cutting such surface portion of such formation; said body member

being adapted to communicate with a source of high pressure liquid flow for supplying liquid cutting medium to said jet nozzle portions; said nozzle means being adapted for forming such a kerf in such hard formation by such freeing of surface material in conjunction with movement of said body member in the direction of the longitudinal extent thereof and along a path adjacent such surface portion; at least one pair of said jet nozzle portions being positioned to produce a respective pair of liquid jets directed generally transversely of the longitudinal axis of said body member and diverging radially outwardly therefrom; and the divergence of said pair of jets being of such magnitude as to permit said pair of jets to provide clearance, by such freeing of surface material, for the transverse extent of said body member and said cutter bit means during the forming of such a kerf in such hard formation.

4,240,665

CONVEYOR MOUNTED VEHICLE

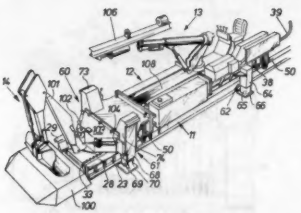
Terence Hubbard, Little Eaton, and Eric A. Jackson, Swanwick, both of England, assignors to Perard Engineering Limited, Ripley, England

Filed Dec. 15, 1978, Ser. No. 969,707

Claims priority, application United Kingdom, Dec. 20, 1977, 53099/77; May 31, 1978, 25975/78

Int. Cl.[2] E21C *35/20, 35/06*

U.S. Cl. 299—31 **8 Claims**



1. A power-supply apparatus for supplying electrical and hydraulic power to a longwall mining face installation, the apparatus comprising an advanceable track and a vehicle mounted on the track whereby the apparatus can be advanced as the mine face recedes, the vehicle having a base defining a platform, a hydraulic track incorporated in the base, power-supply means mounted on the platform, the power-supply means including electric supply means, hydraulic supply means connected with the electric supply means, and hydraulic and electric output points, drive means on the vehicle engageable with members fixed relative to the track for driving the vehicle along the track, extensible and retractable legs mounted on the base, hydraulic means connected with said hydraulic supply means and with said legs for effecting extension and retraction, and captivating means captivating the vehicle on the track, whereby upon extension of the legs the track is raised with the vehicle so that operation of said drive means causes advancement of the track relative to the vehicle.

4,240,666

DEVICE FOR MINING OF THICK STRATA OF USEFUL MINERALS

Wojciech Podgórski, Bytom, and Justyn Stas, Ruda Slaska, both of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

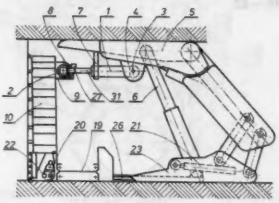
Filed Mar. 20, 1979, Ser. No. 22,264

Claims priority, application Poland, Apr. 14, 1979, 206086

Int. Cl.[3] E21C *27/34*

U.S. Cl. 299—31 **7 Claims**

1. In a device for mining thick strata of useful minerals, comprising a section of wall lining, a mining machine including a plough, conveyor means for removal of mined minerals, pressing means for urging said mining machine against the face of the strata being mined at first and second points, the first point being in the region of the floor and the second point being above the level of the reaction force of the rock being mined against the mining machine, said pressure means comprising rams extending substantially parallel to the floor and comprising an upper pressure unit fixed to a canopy of the lining, said unit including a piston rod with a guide connected with play with guides of the neighboring sections of the lining to form one sequence, said mining machine including a slide which is slidable in a vertical plane and slides on a guide, the improvement comprising a cylinder for the upper pressure unit provided with annular recesses, every second recess being connected to a first multi-position distributor fixed to another



section of the lining and connecting said cylinder to a flow-off main, every other second annular recess being connected with a second multi-position distributor fixed to another section of the lining opposite to said first distributor, said second distributor being connected to said flow-off main, said cylinder having a piston therein dividing the cylinder into two chambers, one of said chambers being connected to a supply main, said distributors all including respective levers situated within the region of movement of said plough so that said levers are deflected by said plough from respective neutral positions, and return to the neutral positions after passage of said plough, said distributors including respective slides which remain in the position to which it has been shifted.

4,240,667

DRIVING GEAR RACK CLEANER FOR A MINING MACHINE

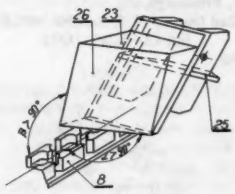
Janusz Sedlaczek, Gliwice; Andrzej Blazewicz, Tychy; Marian Krutki, Katowice; Kazimierz Mandat, Katowice, and Tadeusz Wozniak, Katowice, all of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag", Gliwice, Poland

Filed Feb. 13, 1979, Ser. No. 11,883

Claims priority, application Poland, Feb. 22, 1978, 204864

Int. Cl.[3] E21C *29/24*

U.S. Cl. 299—43 **4 Claims**



1. A driving gear for a mining machine having a body and comprising a coil chain wound over a driving chain wheel and a jockey chain wheel, and co-operating with a rack mounted along the conveyor, the improvement comprising a sweep-off gear mounted on the body of the machine above the rack, said sweep-off gear having a sweeping-off surface disposed above the rack and extending transversely thereacross askew to the longitudinal axis of the rack and inclined to the surface of the

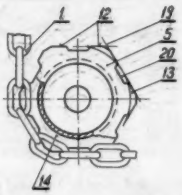
rack, and a console abutting against the lower surface of the body.

4,240,668

DRIVING DEVICE FOR MINING MACHINE

Janusz Sedlaczek, Gliwice; Andrzej Blazewicz, Tychy; Marian Krutki, Katowice; Kazimierz Mandat, Katowice, and Tadeusz Wozniak, Katowice, all of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

Filed Feb. 13, 1979, Ser. No. 11,884
Claims priority, application Poland, Feb. 22, 1978, 204808
Int. Cl.³ E21C *29/02*
U.S. Cl. 299—43 **2 Claims**



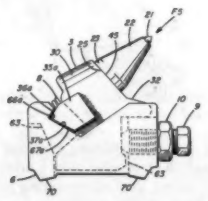
1. In a device for driving a mining machine advancing along a conveyor, comprising an endless link chain extended on a drive wheel, a reversible wheel and a plurality of directing wheels, each directing wheel including two toothed rings separated by a circumferential groove, and a rack fixed alongise the conveyor for separatively engaging said chain, the improvement wherein the teeth of the rings of the directing wheels have a shape formed of segments of sides of a regular polygon circumscribed on a circle, said polygon-shaped teeth constituting the outer outline of the directing wheels, said teeth defining a pitch circle whose radius is less than said radius of the circle circumscribing the polygon, said teeth having tips which are truncated, said directing wheels having inter-tooth spaces and being provided with recesses in said inter-tooth spaces below said pitch circle, the links of the chain which lie in a plane parallel to the axis of rotation of said wheel seating on the flanks of two neighboring teeth, whereas the links lying in a plane perpendicular to the axis of said wheel seat partially in said circumferential groove.

4,240,669

MINING CUTTER BIT HOLDER AND MOUNTING ASSEMBLIES

Lester G. Rollins, Sandy Lake, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 2, 1978, Ser. No. 947,367
Int. Cl.³ E21C *25/12*
U.S. Cl. 299—86 **72 Claims**



1. An assembly for mounting a cutter bit on a driven mechanism comprising:

a bit holder;

said bit holder having a bore adapted to receive a cutter bit;

a shank portion of said holder having at least one rear load bearing surface disposed on the rear of said shank portion;

at least one front load bearing surface disposed on the front of said shank portion of said holder;

a cutter base having an upwardly open socket;

said socket receiving at least a part of said shank portion of said holder;

said socket having at least one base load bearing surface to contact said rear load bearing surface;

said socket having at least one clamping means on said base for exerting a rearward force to said front load bearing surface;

said holder having a forward extension portion extending further forward than said front load bearing surface; and

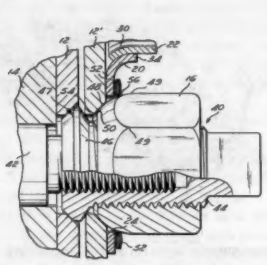
said base having load bearing means in substantially abuting relationship with said forward extension for substantially fixing said holder from rotation about the axis of the socket.

4,240,670

VEHICLE WHEEL COVERS

Edward Zorn, Encino; Bert J. Sherwood, Los Angeles, and Fenton A. Liffick, Granada Hills, all of Calif., assignors to Chemplate Corporation, Los Angeles, Calif.

Filed Oct. 17, 1978, Ser. No. 952,076
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—9 DN **16 Claims**



1. For a vehicle wheel mounted on an axle hub having a plurality of lug bolts which pass through openings in the wheel and secured by ramped lug nuts threaded onto the ends of said lug bolts, the ramp portion of said ramped lug nuts each having an inner ramped end normally seated within a recess of said wheel in a non-interference fit and a free outer ramped end, the improvement in mounting a wheel accessory which includes:

a mounting means having formed therein a first set of apertures slightly undersized with respect to the maximum outer diameter of said ramped lug nuts and a second set of apertures oversized with respect to said maximum outer diameter of said ramped lug nuts, the combined first and second sets of apertures being arranged in a pattern matching the pattern of said plurality of lug bolts with said first set of undersized apertures having a diameter sufficiently large to permit full seating of inner ramped ends of said ramped lug nuts securing said vehicle wheel in a non-interference fit, and said second set of oversized apertures fitting loosely around said ramped lug nuts and permitting also non-interference seating of said inner ramped ends of said ramped lug nuts; and

a plurality of resilient washers each having a normal unexpanded inner diameter undersized with respect to said maximum outer diameter of said ramped lug nuts but of sufficiently large inner diameter to allow normal seating of said inner ramped ends of said ramped lug nuts in said wheel recesses, each of said resilient washers engaging only each of the said free outer ramped ends of those of said ramped lug nuts which are surrounded by said undersized apertures, to permit a non-interference fit with said inner ramped ends of said ramped lug nuts when said

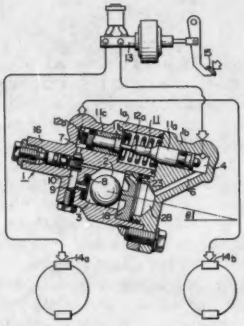
ramped lug nuts are torqued into normal seating engagement with said wheel, said resilient washers being thereby urged against said mounting to secure said mounting means to said vehicle wheel.

4,240,671

BRAKING HYDRAULIC PRESSURE CONTROL UNIT FOR MOTOR VEHICLE

Harumi Ohori; Masayoshi Katagiri, and Tomoyuki Nogami, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 21, 1979, Ser. No. 13,449
Claims priority, application Japan, Jun. 22, 1978, 53-85994[U]
Int. Cl.[3] B60T 8/14
U.S. Cl. 303—6 C 4 Claims



1. A braking hydraulic pressure control unit for a motor vehicle comprising:

an inlet compartment and an outlet compartment communicating with a master cylinder and rear wheel cylinders respectively;

a valve chamber directly communicating with said inlet compartment and communicating with said outlet compartment through a valve port;

a spherical valve floatingly contained in said valve chamber and closing said valve port by a force of inertia when the deceleration of the motor vehicle reaches a predetermined level; and

a differential-acting piston having pressure bearing portions facing said inlet compartment and said outlet compartment respectively;

wherein the improvement comprises an arrangement of components of said piston which includes:

a main piston portion having an end surface facing said inlet compartment;

a first piston segment operatively joined to said main piston portion and movable therewith, said first segment having an end surface facing said outlet compartment;

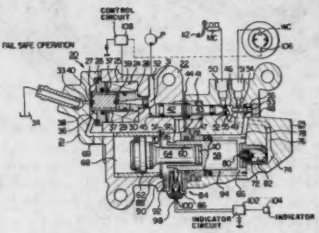
a second piston segment relatively movable with respect to said first segment and having an end surface facing said outlet compartment, the area of said end surface of the main piston portion being greater than that of said end surface of the first piston segment whereby an increase in pressure in the inlet compartment during an initial braking period results in said first piston portion being displaced with respect to said second piston segment.

4,240,672

SKID CONTROL SYSTEM

Masayuki Tokunaga, Tokyo, and Yoshio Otsuka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Mar. 26, 1979, Ser. No. 24,172
Claims priority, application Japan, Apr. 10, 1978, 53/41979
Int. Cl.[3] B60T 8/00
U.S. Cl. 303—92 7 Claims



1. A skid control system for a vehicle including a wheel brake cylinder, comprising:

a valve having an open position for a normal braking operation and having a closed position for a skid control operation;

a hydraulic pressure responsive actuator for said valve, said actuator including an expansion piston which has a large diameter portion and a small diameter portion and a normal braking position in which said expansion piston allows said valve to take said open position and a skid control position in which said expansion piston allows said valve to take said closed position;

means responsive to movement of said expansion piston for producing a signal only when said expansion piston has moved into said skid control position, said movement responsive means including a switch device,

said switch device comprising a plunger extending slidably transversely to the axis of said expansion piston and having one end which contacts with a first peripheral surface of said small diameter portion when said expansion piston is in said normal operating position and which contacts with a second peripheral surface of said large diameter portion when said expansion piston is in said skid control position, and

two electric conductors spaced from each other,

said plunger having the other end thereof spaced from said two electric conductors to disconnect same from each other when said one end of said plunger is in contact with said first peripheral surface and which contacts with said two electric conductors to connect same to each other when said one end of said plunger is in contact with said second peripheral surface.

4,240,673

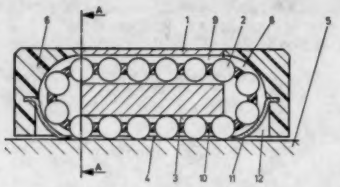
LONGITUDINALLY MOVABLE ANTIFRICTION BEARING WITH FLEXURAL TONGUE

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,904
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 7815287[U]
Int. Cl.[3] F16C 29/06
U.S. Cl. 308—6 C 15 Claims

1. In an antifriction bearing for longitudinal movement with respect to a machine element, comprising a guide block having a guide for guiding an endless row of rolling elements, the

guide defining a load zone enabling the rolling elements to move between a race on the machine element and a race on the guide block, a return zone for rolling elements not under load, and a pair of end sections having reversing races joining the return zone and load zone at the respective ends thereof; the



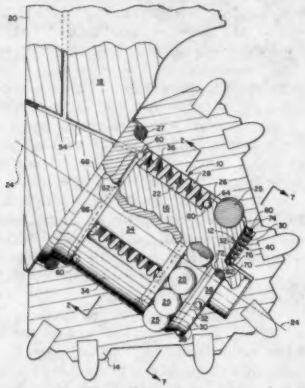
improvement wherein each said end section comprises a flexurally elastic tongue directed toward the respective ends of the load zone and forming a part of said reversing race, said tongues being mounted adjacent the respective ends of the load zone and positioned to lift rolling elements from said loading zone and direct them in respective reversing race.

4,240,674

POSITIVE LUBRICATING AND INDEXING BEARING ASSEMBLY

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Nov. 19, 1979, Ser. No. 95,532
Int. Cl.³ F16C *19/34*
U.S. Cl. 308—8.2 **31 Claims**



1. A bearing assembly, comprising:

means defining a pair of race members operatively retained for relative movement, each race member defining a raceway, the raceways of the pair of race members being positioned in spaced apart and opposing confronting relation;

a plurality of bearing segments movably positioned intermediate the raceways, each of said bearing segments having bearing surfaces adjoining both raceways, the bearing surfaces adjoining the raceways at surface areas substantially greater than a point contact or a line contact;

indexing means operatively interconnecting at least one of said race members and at least one of said bearing segments for moving said bearing segments relative to both raceways during relative movement of said race members;

a lubricating element carried between the raceways and in conjunction with the bearing segments, said lubricating element defining a chamber within which to receive lubricant and passageway means for communicating the lubricant from chamber to said raceways; and

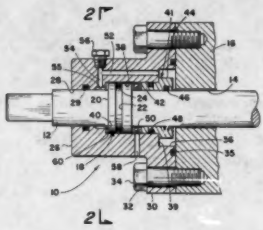
means operatively associated with at least one of said race members and for expanding and contracting the chamber of said lubricating element during relative movement of said race members.

4,240,675

STUFFING GLAND

Nicholas M. Rylander, 811 Beacon Bldg., Tulsa, Okla. 74103

Filed Oct. 23, 1978, Ser. No. 953,461
Int. Cl.³ F16C *19/10, 39/04*
U.S. Cl. 308—9 **9 Claims**



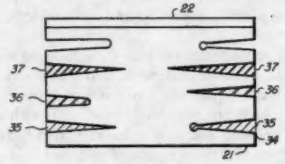
1. A stuffing gland for a shaft subjected to relatively high pressures and comprising housing means secured around the outer periphery of the shaft, outwardly extending circumferential shoulder means provided on the outer periphery of the shaft and disposed within the housing means, passageway means provided in the housing means for communicating the pressure acting on the shaft to the outboard face of the circumferential shoulder means, collar means loosely disposed around the outer periphery of the shaft and disposed within the housing means and having one end thereof open to the pressure acting on the shaft, bearing means interposed between the collar means and the circumferential shoulder means for transmitting pressure to the inboard face of the circumferential shoulder means, the cross sectional area of the circumferential shoulder means being in selected ratio with the cross sectional area of the shaft whereby pressures acting on the outboard side of the circumferential shoulder means when the movement of the collar means is limited by the housing means are equal and opposite to the pressures acting on the shaft for equalizing the forces acting on the shaft.

4,240,676

BENDING PAD THRUST BEARING

Hugh G. Anderson, Severna Park; Earl R. Quandt, Annapolis, and A. Bayne Neild, Severna Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,191
Int. Cl.³ F16C *17/04*
U.S. Cl. 308—9 **15 Claims**



1. A thrust bearing pad for transmitting thrust loads between a rotary thrust member and a stationary thrust member, said bearing pad being rigidly attached to one of said members and comprising:

a planar base portion including means uniformly supporting said bearing pad on a member; and

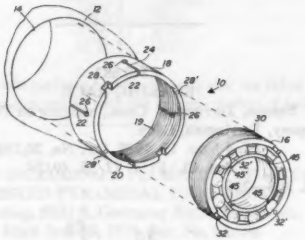
a bearing face in sliding engagement with the opposite thrust member for transmitting power to said opposite thrust member while moving relative thereto, said bearing face being substantially planar and parallel to said base portion in the unstressed condition and being thermoelastically deformable in operation to assume a crowned bearing face when thrust loads are applied thereto.

4,240,677

BEARING MOUNTING DEVICE AND BEARING

Douglas L. Payne, 29155 Spoon, Madison Heights, Mich. 48071, and Peter A. Walter, 27229 Sherri Lynn Ct., Mt. Clemens, Mich. 48045

Filed Jan. 25, 1979, Ser. No. 6,343
Int. Cl.³ F16C *35/06*
U.S. Cl. 308—15 **6 Claims**



1. A bearing mounting device and a bearing including an outer race and an inner race comprising:

a radially expandable sleeve comprising radially movable segments along the periphery thereof, and a tapered, threaded bore;

the bearing outer race having a tapered, threaded outer surface complementary to the bore;

means engaging the bearing outer race for rotating the tapered threaded outer surface in the tapered threaded bore; and

means for preventing rotation of the sleeve when the bearing is being rotated.

4,240,678

NON-ROTATING FLUID DAMPED COMBINATION THRUST AND JOURNAL BEARING

Charles R. Sarle, Noblesville, and Bruce R. Owen, Indianapolis, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,976
Int. Cl.³ F16C *33/10*
U.S. Cl. 308—121 **9 Claims**

1. A bearing structure for high speed rotating shafts comprising,

(a) a housing,

(b) a bore through said housing,

(c) a radial sleeve bearing positioned within said bore and having opposite ends extending beyond said bore to function as an axial thrust bearing,

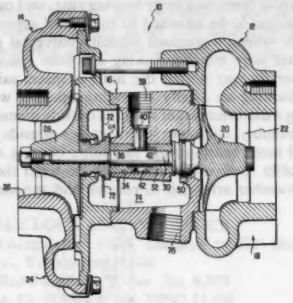
(d) means anchoring said bearing to said housing against rotation and axial movement in said housing bore,

(e) a shaft rotatably journalled in said sleeve bearing, (f) abutments carried by the shaft adjacent to said bearing ends forming thrust bearings,

(g) said means for anchoring said sleeve bearing against rotational and axial movement in said housing being a hollow pin, said pin carrying thrust loads,

(h) said sleeve bearing absorbing any net thrust on said shaft thus limiting axial displacement of said shaft,

(i) said housing having a lubricant supply hole and said sleeve bearing having a first lubricant receiving hole receiving said hollow pin with said hollow pin providing a



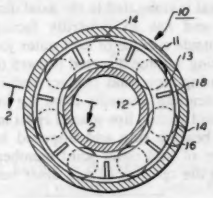
flow path for lubricant supply to said shaft and a second hole providing a flow path for lubricant supply for oil film at the bearing outside diameter.

4,240,679

FREE OIL CONTROL IN A GYRO BEARING DESIGN

Howard S. Schnoll, Oakland, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 25, 1979, Ser. No. 6,413
Int. Cl.³ F16C *33/66, 33/38*
U.S. Cl. 308—187 **5 Claims**



1. An antifriction angular contact ball bearing comprising:

an outer race,

an inner race,

an integral retainer positioned between said outer and inner races having a plurality of spaced ball pockets,

a plurality of balls disposed within said retainer ball pockets, and

a plurality of elongated flat members having a portion conforming to the shape of the outer race slidably disposed in slots opening on the periphery of said retainer and contacting said outer race by means of centrifugal force whereby lubricant between said outer races and said retainer is maintained at a level to provide a consistently low friction bearing.

4,240,680

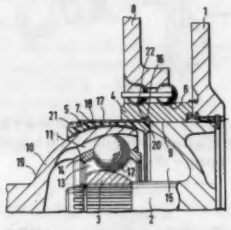
BEARING ASSEMBLY FOR A MOTOR VEHICLE WHEEL

Werner Krude, Siegburg-Kaldauen; Karl-Heinz Müller, Wissen, and Alfons Jordan, Hennef, all of Fed. Rep. of Germany, assignors to Uni-Cardan AG, Siegburg, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,077
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817546
Int. Cl.³ F16C *33/76*; F16D *3/30*
U.S. Cl. 308—187.1 **8 Claims**

1. A bearing assembly for use with a motor vehicle wheel

including an axially elongated inner bearing ring arranged to be secured to the wheel hub of the motor vehicle wheel, an outer bearing ring laterally encircling and spaced radially outwardly from said inner bearing ring, said outer bearing ring is arranged to be attached to the wheel support of the motor vehicle wheel, a constant velocity universal joint comprising an outer joint member having a hollow space, an inner joint member located within the hollow space, said inner bearing ring forming an axially extending opening with the opening having a diameter larger than the outside diameter of said outer joint member, said outer joint member extends into the opening in said inner bearing ring, said inner bearing ring arranged to releasably receive the wheel hub centered therein, said inner joint member arranged to receive and support a trunnion at-



tached to the wheel hub, said outer joint member having a spherically shaped outside surface, and a contact seal located between said inner bearing ring and the outside surface of said outer joint member, wherein the improvement comprises that said contact seal is elongated in the axial direction of said inner bearing ring and has an inwardly facing surface directed toward the outside surface of said outer joint member and an outwardly facing surface directed toward the inside surface of said inner bearing ring, said contact seal having at least two sealing lips extending inwardly from the inwardly facing surface thereof, said sealing lips spaced apart in the axial direction of said inner bearing ring and disposed in contact with the outside surface of said outer joint member, and said contact seal is fixed in the opening in said inner bearing ring.

4,240,681

TWO ROW ROLLING BEARING ASSEMBLY HAVING SINGLE PIECE INNER RING AND TWO PIECE OUTER RING

Robert Stolz, Schweinfurt, and Walter Hahn, Schonungen, both of Fed. Rep. of Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

Continuation of Ser. No. 850,794, Nov. 11, 1977, Pat. No. 4,138,169. This application Nov. 20, 1978, Ser. No. 962,175

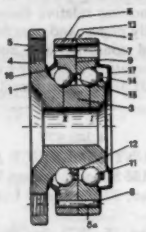
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654607

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.³ F16C *19/18, 23/08*

U.S. Cl. 308—189 R **3 Claims**

1. In a rolling bearing assembly having first and second members relatively rotatable with respect to one another and defining first and second races therebetween, rolling elements in said races and defining first and second rows respectively of said rolling elements, and means for mounting said first and second members; the improvement wherein said first member comprises first and second elements having ring-shaped portions defining running tracks for said first and second races, respectively, and means detachably holding said first and second elements together, said second member having a unitary portion on which running tracks for said first and second races are formed, said second member having a radially extending mounting flange on one side thereof, one of said rows of said rolling elements having a substantially greater number of rolling elements than the other of said rows, said first and second elements having aligned axially extending hole means distributed about their circumference for mounting said bearing



assembly, the hole means of the one of said first and second elements towards said flange being threaded.

4,240,682

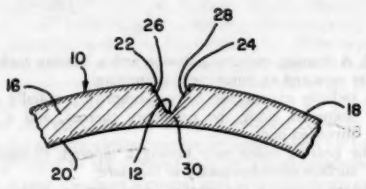
BEARING RACE

Carl F. Benson, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 15, 1979, Ser. No. 20,754

Int. Cl.³ F16C *33/58, 19/24*

U.S. Cl. 308—216 **5 Claims**



4. A bearing race comprising: an annular metal member having at least one longitudinally extending groove, said annular metal member having a relatively soft metal core with a first carburized portion extending inwardly from the outer surface of the metal annular member, a second carburized portion extending outwardly from the inner surface of the annular metal member substantially the same thickness as the first carburized portion, carburized portions extending from the sides of said groove, and a carburized portion extending radially from the bottom of said groove entirely through the annular metal member having a maximum thickness twice the thickness of said first carburized portion.

4,240,683

ADJUSTABLE BEARING ASSEMBLY

Gary M. Crase, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

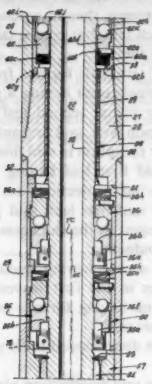
Filed Jan. 12, 1979, Ser. No. 3,004

Int. Cl.³ F16C *19/12;* **E21B** *17/00*

U.S. Cl. 308—227 **25 Claims**

1. In a bearing assembly comprising a housing structure; a shaft rotatable in said housing; bearing means between said housing and said shaft for transmitting thrust between said shaft and said housing; said bearing means including one race carried by said housing; a second race carried by said shaft and bearing elements between said races; and means establishing a rotary drive connection between said shaft and said second

bearing race: the improvement wherein said means establishing a rotary drive comprises surfaces of said second race and said



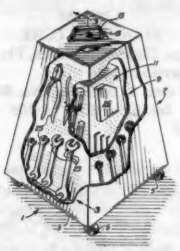
shaft, one of said surfaces being eccentric and the other of said surfaces being concentric with the axis of rotation of said shaft.

4,240,684

TOOL BOX INCLUDING A PLURALITY OF ROTATING NESTED PYRAMIDAL TOOL RACKS

Jack H. Henning, 5002 S. Greenway Dr., Tucson, Ariz. 85706

Filed Jun. 25, 1979, Ser. No. 51,538
Int. Cl.³ A47B *31/00*
U.S. Cl. 312—202 **13 Claims**



1. A tool rack assembly comprising in combination:

a. an outer rack, said outer rack including

i. a first tool supporting panel, said first tool supporting panel partially enclosing a first region;

ii. a removable tool supporting panel, said removable tool supporting panel being engageable to said first tool supporting panel to further enclose said first region;

iii. a plurality of tool supporting elements attached, respectively, to the outer surfaces of said first tool supporting panel and said removable tool supporting panel;

iv. means for removably connecting said removable tool supporting panel to said first tool supporting panel, whereby said removable tool supporting panel can be removed, allowing access to said first region through an opening created by removal of said removable tool supporting panel;

b. an inner rack nested in said first region within said outer rack;

c. bearing means attached to said inner rack for rotatably supporting said inner rack within said outer rack enabling a user to conveniently remove said first removable tool supporting panel from said outer rack and enabling the user to easily rotate said inner rack within said outer rack to enable the user to easily reach through said opening to any tool supported on a tool supporting surface of said inner rack; and

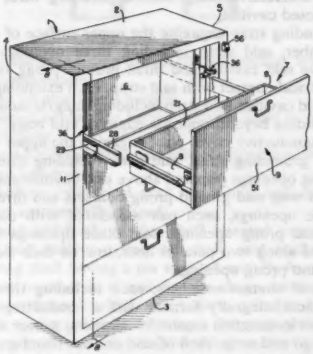
d. a rigid cover or shell for covering said outer rack to prevent access to said first tool supporting panel and said removable tool supporting panel and further including means for securing said cover or shell over said outer rack.

4,240,685

FILE LOCK AND INTERLOCK

Leo Terlecki, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio

Filed Feb. 5, 1979, Ser. No. 9,599
Int. Cl.³ E05B *65/46*; E05C *15/04*
U.S. Cl. 312—217 **7 Claims**

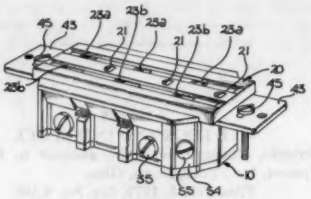


1. A file cabinet having a plurality of vertically stacked storage elements provided with interlock means for preventing the opening of more than one said element at a time, said interlock means including an interlock assembly having a plurality of vertically aligned lift bars in said cabinet for limited vertical displacement therein, guide means in said cabinet containing said lift bars, actuating means carried by each said lift bar each including rotatable lesser and greater diameter portions normally disposed immediately adjacent the next lower one of said lift bars, means mounting each said storage element within said cabinet for substantially horizontal rectilinear movement therein, activator means horizontally movable concurrently with each said storage element to engage one said actuating means to vertically displace its respective lift bar and any other lift bars thereabove, an inturned flange on each said lift bar beneath each said actuating means of the next higher lift bar, blocking means adjacent said activator means overlying said inturned flange of the next lowest lift bar when one said storage element is opened to preclude elevation of any lift bars below and thus opening of any other storage elements below, while said storage elements above said opened storage element are precluded from opening as their respective activator means is blocked from rectilinear displacement by the elevated inturned flanges of said lift bars above said opened storage element, a lock dog attached to each said lift bar and having a distal catch, said storage elements having a front provided with keeper means horizontally aligned with said lock dog catches, and means selectively operable to simultaneously elevate and lower all of said lift bars and attached lock dogs to respectively engage and disengage all said catches relative said keeper means.

4,240,686
TRIPLEX RECEPTACLE

Peter A. Kurbikoff, Agoura, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 6, 1979, Ser. No. 27,922
Int. Cl.[3] H01R 4/66
U.S. Cl. 339—14 R 10 Claims

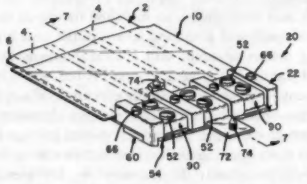


1. A triplex receptacle comprising:
a non-conductive body member defining three centrally disposed cavities;
a grounding strap engaging the upper surface of said body member, said strap including three openings disposed above said cavities and three ground prong contacts in electrical contact with said strap, each extending into one of said cavities, said strap including integral mounting ears extending beyond opposite edges of said body;
a non-conductive cover plate engaging the upper surface of said grounding strap, said plate including three ground prong openings disposed above said cavities and in alignment with said ground prong contacts and three pairs of blade openings, each pair associated with one of said ground prong openings, said blade openings being disposed along two parallel lines, one on each side of said ground prong openings;
a pair of contact members, each including three sets of contacts integrally formed with a conductive strip and power connection means for allowing power to be coupled to said strip, each of said contact members disposed in said body member such that said strip is generally parallel to the line of said aligned cavities, each set of said contacts being disposed below one of said blade openings;
whereby a compact triplex receptacle is realized.

4,240,687
TRANSITION BLOCK FOR TERMINATING FLAT CONDUCTORS

Edward D. Bunnell, Palm Harbor, and Thomas J. Sotolongo, Clearwater Beach, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 30, 1979, Ser. No. 43,769
Int. Cl.[3] H01R 9/08
U.S. Cl. 339—99 R 7 Claims

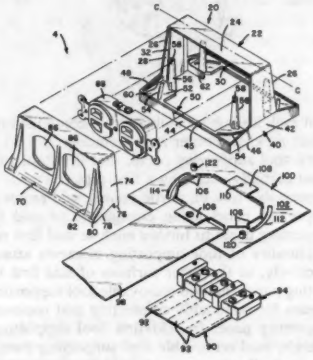


1. A transition block for interconnecting an insulated flat conductor cable to round conductors comprising:
a low profile generally rectangular dielectric body having a generally planar first surface, a generally planar second surface on the opposite side of said body from said first surface, a pair of opposed sidewalls, and a pair of opposed endwalls, said first surface having a plurality of said first planar recesses therein, said second surface having a like plurality of second planar recesses therein, said recesses communicating with one sidewall of said body, said body having a bore means therein extending perpendicularly inward from each said first recess, said bore means having threaded means therein,
a like plurality of terminals formed from conductive sheet stock, said terminals each having a generally planar first leaf, a generally planar second leaf parallel to said first leaf, and a common web, said first and second leaves being dimensioned for reception in said first and second recesses respectively, said first leaf having a hole therein, said second leaf having projections on the surface thereof facing opposite said first leaf, said projections having a height at least equal to the thickness of insulation on one side of a flat conductor,
a like plurality of screws having shanks dimensioned to fit within the holes in the first leaves and into said bore means, said shank having threads profiled to mate with said threaded means,
a termination plate dimensioned to fit over said second planar recesses,
means for securing said termination plate to said body,
whereby, said terminals may be assembled to said body with said first leaves in said first recesses, said second leaves in said second recesses, and said webs adjacent said one sidewall, said insulated flat conductor cable may be positioned adjacent to said second surface with each conductor therein adjacent to a second leaf, said termination plate may be secured to said body causing said projections to pierce said insulation and make contact with said conductors, and said screws may be inserted through said holes in said first leaves into said threaded means to secure said first leaf to said body and to provide means for terminating a round conductor.

4,240,688
FLOOR FIXTURE

Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1979, Ser. No. 80,911
Int. Cl.[3] H01R 13/506
U.S. Cl. 339—122 F 3 Claims



1. A floor fixture comprised of:
a housing comprised of
a base having two opposed sides and two opposed faces which define an aperture therebetween and having mounting means located on said sides,
opposed upright side walls spaced from said faces and extending from said sides to a bight extending between said sidewalls, said bight and sidewalls having a raised ridge extending around the interior thereof,

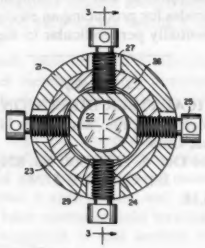
a face plate having flexible side members, said side members having a height at least equal to the distance from said bight to said mounting means of said housing, said side members having a bottom surface configured to complement said mounting means and a depth no greater than the distance from a face to said ridge of said housing whereby, said side members are flexed inward, said face plate is moved into said housing until it is against said ridge and said side members are released locking said complementary bottom surfaces against said mounting means.

4,240,689

TELESCOPE RETICLE ADJUSTING MEANS

J. Peter E. Kooi, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 9, 1979, Ser. No. 19,372
Int. Cl.³ G02B 27/32
U.S. Cl. 350—10 **10 Claims**



1. In an optical instrument comprising a telescope and reticle means situated in the optical path of said telescope, the improvement in means for adjusting the reticle with respect to the axis of said optical path, said improvement comprising:

(a) a telescope body of circular interior cross-section;

(b) a plurality of ports communicating between the exterior and interior of said telescope body, said ports being substantially equally spaced along an inner circumference of said body;

(c) a cylindrical collar located within and in contact with the interior of said body, the wall of said collar being longitudinally split to allow forcible expansion and compression of the diameter thereof;

(d) a plurality of tapped bores through the wall of said collar, said bores being in substantial radial alignment with said ports;

(e) reticle means comprising a reticle support situated within said collar, said support having a diameter sufficiently smaller than the inner diameter of said collar to allow freedom of radial movement of said support;

(f) a plurality of flat areas on the surface of said support, said areas being in substantial radial alignment with and perpendicular to said collar bores; and

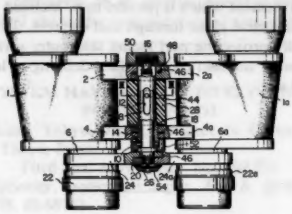
(g) a plurality of screws in respective threaded engagement with said collar bores and contact with said flat support surface areas, said screws being of sufficient length to be manipulable from the exterior of said telescope body by way of said body ports.

4,240,690

SLIDING FINGER PLATE FOCUS ADJUSTING DEVICE FOR A BINOCULAR

Hideyuki Kimura, Ichikawa, Japan, assignor to Hideyuki Kimura and Tokyo Bussan Kabushiki Kaisha, both of, Japan

Filed Jan. 15, 1979, Ser. No. 3,785
Claims priority, application Japan, Nov. 27, 1978, 53-162999[U]
Int. Cl.³ G02B 7/06, 23/00
U.S. Cl. 350—36 **2 Claims**



1. A focusing adjusting device for a binocular which comprises in combination:

(a) a pair of object lens barrels;

(b) a pair of ocular lens barrels slidably fitted in said object lens barrels;

(c) means for connecting said pair of object lens barrels and ocular lens barrels;

(d) a hollow cylindrical shaft, on which said connecting means are centrally hinged;

(e) a back-and-forth moving shaft inserted concentrically into said hollow cylindrical shaft, said back-and-forth moving shaft having a pin studded radially from it;

(f) a seat member in a semi-circular shape, having an axial passage through which said hollow cylindrical shaft extends, said seat member having a flattened platform; and

(g) a finger plate member slidably fitted on the top flattened platform of said seat member to move in a predetermined direction,

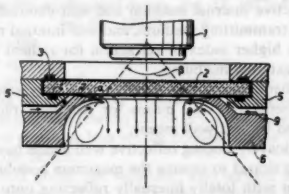
each of said cylindical shaft, seat member, and finger plate member havin a long hole, through which said pin from said back-and-forth moving shaft passes, said long hole in said finger plate member being formed slantly so that when the finger plate member is moved in such definite direction, said pin causes said ocular lens barrels to move back and forth along with said back-and-forth moving shaft to perform focusing operation.

4,240,691

PROTECTIVE DEVICE FOR OPTICAL ELEMENTS

Göran Holmqvist, Älvsjö; Staffan Källen, Johanneshov, and Bertil Jansson, Täby, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed May 8, 1979, Ser. No. 37,043
Claims priority, application Sweden, Jun. 15, 1978, 7806890
Int. Cl.³ G02B 7/00
U.S. Cl. 350—63 **7 Claims**



1. A device for keeping an outer surface of an optical ele-

ment clean comprising a protective device with an opening placed in front of said surface, said opening having inner walls each having an inner and outer edge, said inner walls extending out from said surface of said optical element when said protective device is placed in front of said surface, said protective device being positioned relative to said surface so as to define a slot extending peripherally around the edge of the opening facing said surface, for forcing gas to stream through said slot, at least a part of the inner walls of the opening having a part projecting inwardly toward the axis of said optical element, said inwardly projecting part having a surface remote from said optical element which is parallel to or inclined outwardly from a symmetrical plane through said element, the surface of said inwardly projecting part facing said outer surface of the optical element and said outer surface defining at least a portion of said slot.

4,240,692

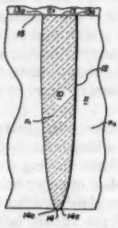
ENERGY TRANSMISSION

Roland Winston, Chicago, Ill., assignor to The University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 628,383, Nov. 3, 1975, abandoned. This application Dec. 17, 1975, Ser. No. 641,557

Int. Cl.³ G02B *5/14*; F24J *3/02*

U.S. Cl. 350—96.10 **24 Claims**



1. Radiant energy transmission apparatus for use in an external radiant energy transmitting medium and operative in a concentrating mode, said apparatus comprising, transmission means including:

(a) substantially concavely sloping radiant energy reflective wall means for guiding radiant energy, said wall means comprising means defining an energy inlet,

(b) means, including said energy inlet, for defining a field of acceptance for radiant energy, and

(c) a radiant energy refractive internal medium, said reflective wall means comprising an interface between said refractive internal medium and said external radiant energy transmitting medium, and said internal medium having a higher index of refraction for radiant energy then said external medium;

and radiant energy trap means operatively associated with said reflective wall means for receiving radiant energy guided by said wall means;

said concavely sloping reflective wall means having a profile curve sloped to assume the maximum possible slope consistent with totally internally reflecting onto said energy trap means the extremal energy rays which enter said energy inlet within said field of acceptance.

4,240,693

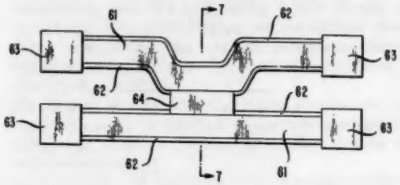
ELECTRO-OPTICAL DEVICE BASED ON ELECTROPLATING ACTION

Leo F. Johnson, Bedminster; Shobha Singh, Summit, and LeGrand G. Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,188

Int. Cl.³ G02B *5/14*; G09F *9/00*; G02F *1/29*

U.S. Cl. 350—96.14 **2 Claims**



1. Electro-optical device comprising first and second substrate-supported waveguides, said waveguides being essentially parallel for at least a distance, said device comprising coupling means between said waveguides along at least a portion of said distance, said coupling means comprising an electroplating medium which is in contact with said waveguides along said portion, and said coupling means further comprising electrodes for producing an electric field in a direction which is essentially perpendicular to the substrate.

4,240,694

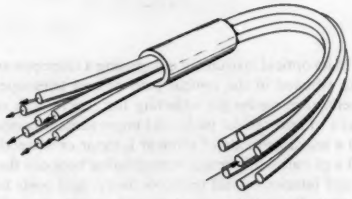
SINGLE OPTICAL FIBER DIRECTIONAL COUPLER

Jing-Jong Pan, Melbourne, Fla., assignor to Harris Communications, Cleveland, Ohio

Filed Oct. 6, 1977, Ser. No. 839,815

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.16 **7 Claims**



1. An optical fiber coupler comprising:

a coupling chamber;

a first group of single optical fibers inserted into said chamber, each of said first fibers having an end portion within said chamber free of any cladding and said first fibers being arranged such that one of said first fibers is at the center of said first group of fibers and the other said first fibers surround said centrally arranged first fiber; and,

a second group of single optical fibers inserted into said chamber, each of said second fibers having an end portion within said chamber free of any cladding and said second fibers being arranged such that one of said second fibers is at the center of said second group of fibers and the other said second fibers surround said centrally arranged second fiber, the end faces of said second fibers being arranged sufficiently close to the end faces of said first fibers such that signals traveling within each of said first fibers can be directly transmitted into a corresponding said second fiber;

whereby signals transmitted along any one of said first fibers

is transferred to all of the other said first fibers through the end portions of such fibers that are free of cladding and such signals are also transferred to all of said second fibers within said coupling chamber.

4,240,695

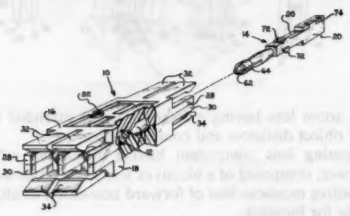
OPTICAL FIBERS CONNECTOR

Robert F. Evans, Newbury Park, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,323, Jan. 10, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,426

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.21 **4 Claims**



1. A connector for optical fibers, said connector comprising:

a body having opposed aligned sockets leading to an interconnecting bore, each socket having a tapered seat adjacent the bore;

a pair of terminals, each terminal comprising a pair of elongated channel members having complementary mating surfaces, each channel member being split into fingers at one end, said fingers terminating in jaws adapted to contact and align the stripped end of an optical fiber otherwise extending through but not in contact with said members, said jaws having tapered outer surfaces, there being a terminal in each socket; and

inter-engaging latch means on said terminals and the body for holding terminals in said sockets with the tapered surfaces engaging said seats.

4,240,696

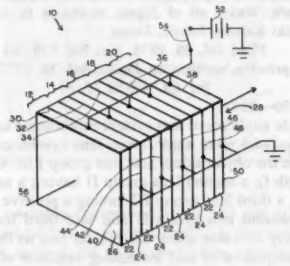
MULTILAYER ELECTRO-OPTICALLY TUNABLE FILTER

John M. Tracy, and Pochi A. Yeh, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1979, Ser. No. 93,362

Int. Cl.³ G01B *27/00*

U.S. Cl. 350—163 **9 Claims**



1. An optical filter, comprising:

a plurality of adjacent layer pairs, each pair having an incident and an emergent and including:

a first dielectric layer with a refractive index n,

a second dielectric layer with a refractive index n adjacent to said first layer, said layers having the same thickness, and

a control electrode disposed between and in electrical contact with said layers; and

a plurality of ground electrodes disposed on said layer pairs such that at least one of said ground electrodes is in electrical contact with each incident and each emergent surface,

whereby light traversing the filter may be controlled by the application of an electric potential between said control electrodes and said ground electrodes.

4,240,697

LENS SYSTEM HAVING SELECTIVELY SHIFTABLE FOCAL LENGTH

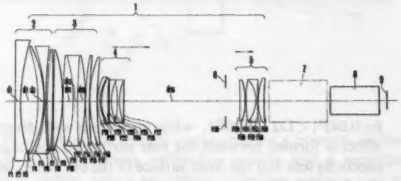
Eiichi Takano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1976, Ser. No. 692,518

Claims priority, application Japan, Jun. 5, 1975, 50-67955; Jun. 6, 1975, 50-68763

Int. Cl.³ G02B *15/04, 15/18*

U.S. Cl. 350—183 **8 Claims**



1. A zoom lens system having an enlarged range of variation in magnification, comprising a primary lens part consisting of a focusing front lens group and a negative variator group and a positive variator group arranged in the order recited relative to incident light from an objective, a basic lens group positioned in rear of said primary lens part, said basic lens group consisting of an exchangeable front sub-group having a negative refracting power and a fixed rear sub-group, and a focal attachment lens which is to be positioned between said primary lens part and said rear sub-group in axial alignment with each other after said front sub-group is taken off, said attachment lens comprising two lens groups axially spaced apart from each other, said attachment lens being constructed such that when said attachment lens is positioned between said primary lens part and said rear sub-group, the back focal length of said zoom lens system is the same as before said front sub-group is taken off.

4,240,698

LARGE APERTURE ZOOM LENS

Sadahiko Tsuji, Yokohama, and Yasuhisa Sato, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,299

Claims priority, application Japan, Jul. 22, 1977, 52-88038

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—184 **4 Claims**

1. A large aperture zoom lens comprising:

a first lens group for focusing with positive refractive power consisting of a negative meniscus lens whose convex surface is directed toward the object, a bi-convex lens and a positive meniscus lens whose convex surface is directed toward the object;

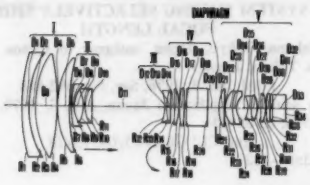
a second lens group for variation, said second lens group being positioned at the image side of the first lens group and consisting of a negative meniscus lens whose convex surface is directed toward the object and a negative lens

constituted of a negative lens and a positive lens cemented with each other;

a third lens group with a negative refractive power movable forward and backward for compensation and positioned at the image side of the second lens group; and

a basic lens group positioned at the image side of the third lens group;

whereby the distance D2 between the negative meniscus lens where F1 represents the focal length of the first group and the bi-convex lens in the first lens group is represented



by $0.04F1 < D2 < 0.06F1$, while an air lens with divergent effect is formed between the rear surface of the negative meniscus lens and the front surface of the bi-convex lens in the first lens group;

the third lens group consisting of a bi-concave lens and a positive lens cemented with each other;

the basic lens consisting of a sub-group for collimating the beam coming from the third lens group and an image forming lens;

whereby the relations

$$0.9 < \frac{R2}{R3} < 1$$

$$0.6F1 < R5 < 0.7F1$$

$$3\,|F2| < R7 < 4\,|F2|$$

$$0.1 < N1 - \frac{N2 + N3}{2} < 0.21$$

$$25 < \frac{\nu 2 + \nu 3}{2} - \nu 1 < 40$$

are satisfied, in which relation, R2 represents the radius of curvature of the image side surface of the negative meniscus lens in the first group, R3 is the radius of curvature of the object side surface of the bi-convex lens in the first group, D2 represents the distance between the negative meniscus lens and the bi-convex lens in the first group along the optical axis, R5 is the radius of an object side surface of the positive meniscus lens in the first group, R7 represents the radius of curvature of the first surface convex to the object in the second group, N1 and $\nu 1$ are the refractive power and the Abbe number of the negative meniscus lens in the first group with reference to the d line, N2 and $\nu 2$ are the refractive power and the Abbe number of the bi-convex lens in the first group with reference to the d line, N3 and $\nu 3$ represent the refractive power and the Abbe number of the positive meniscus lens in the first group with reference to the d line, F1 is the focal length of the first group and F2 represents the focal length of the second group.

4,240,699

ZOOM LENS HAVING EXTENDED FOCUSING RANGE

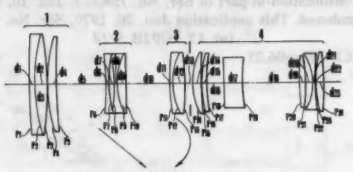
Yasuhisa Sato, Kawasaki; Sadahiko Tsuji, Yokohama, and Katsumi Tanaka, Toyko, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,342, Nov. 1, 1976, abandoned. This application May 3, 1978, Ser. No. 902,499

Claims priority, application Japan, Nov. 5, 1975, 50/133321

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—184 **3 Claims**



1. A zoom lens having a focusing range extended toward shorter object distances and comprising:

a focusing lens component having a positive refractive power, composed of a biconvex lens means followed by a positive meniscus lens of forward convexity, axially movable for focusing;

a variation lens component having a negative refractive power, axially movable for variation in focal length of said zoom lens and positioned on the image side of said focusing lens component;

a compensation lens component positioned on the image side of said variation lens component and axially movable along with said variation lens component;

a basic lens component having a positive refractive power and positioned on the image side of said compensation lens component; and

said focusing lens component fulfilling the following relationship,

$$0.8 < \phi_3/\phi_1 < 1.0$$

wherein

ϕ_1 is the refractive power of the frontmost lens surface of said biconvex lens means within said focusing lens component;

ϕ_3 is the refractive power of the rearmost lens surface of said biconvex lens means within said focusing lens component.

4,240,700

WIDE ANGLE ZOOM LENS HAVING A HIGH VARIATION RATIO

Ryota Ogawa, Kawagoe; Sadao Okudaira, Ranzan, and Satoru Tachihara, Wako, all of Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 929,763

Claims priority, application Japan, Jul. 30, 1977, 52-91846

Int. Cl.³ G02B *15/16*

U.S. Cl. 350—184 **12 Claims**

1. A wide angle zoom lens system exhibiting a high variation zoom ratio, said wide angle zoom lens system comprising in order from the object side a first lens group I having a positive focal length f_I, a second lens group II having a negative focal length f_{II}, a third lens group III having a positive focal length f_{III}, said second lens group II and said third lens group III being axially movable along the optical axis so that each produces a component of said increasing variation effect, characterized by:

(a) the amount of axial movement $X_I(f)$ of the first lens group I and the amount of axial movement $X_{III}(f)$ of the third lens group III satisfying the following conditions:

$X_f(f) = k(f) \cdot X_{III}(f)$, and (1)

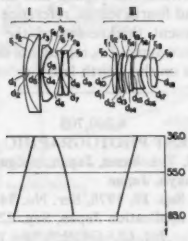
$0 \leqq k(f) \leqq 3.0$; (2)

(b) the lens system having a high zoom variation ratio equal to or greater than 2 times; and,

(c) the lens system satisfying the following conditions:

$1.70 < f_I/f_S < 5.0$ (3)

$0.60 < |f_{II}|/f_S < 1.50$ (4)



$0 < l_{I\text{-}II}/f_S < 0.2$ (5)

$0.6 < l_{II\text{-}III}/f_S < 1.8$ (6)

wherein:

f_S is the overall focal length at the wide angle position;

$l_{I\text{-}II}$ is the aerial space between the first lens group I and the second lens group II at the wide angle position; and

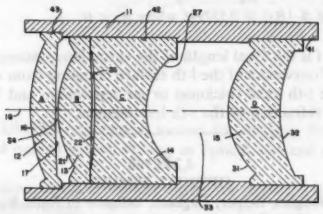
$l_{II\text{-}III}$ is the aerial space between the second lens group II and the third lens group III at the wide angle position.

4,240,701

ALL PLASTIC PROJECTION LENS ASSEMBLY WITH ASPHERIC SURFACE

John D. Lytle, San Jose, Calif., assignor to M.U. Engineering & Manufacturing, Inc., Mountain View, Calif.

Filed Jun. 12, 1978, Ser. No. 914,395
Int. Cl.³ G02B *3/04, 9/34*
U.S. Cl. 350—189 **15 Claims**



1. A lens assembly comprising a lens cell and at least four separate airspaced lens elements mounted in said cell and identified as first, second, third and fourth lens elements, each of said lens elements having first and second optical surfaces, each of said lens elements being injection molded of a plastic material, the second surface of the fourth lens element having an aspheric surface, said aspheric surface having an aspheric SAG Z equal to

$$\frac{CY^2}{1 + [1 - C^2Y^2]^{\frac{1}{2}}} + DY^4 + EY^6$$

where

$C = 0.07366$

$D = 3.23589 \times 10^{-4}$

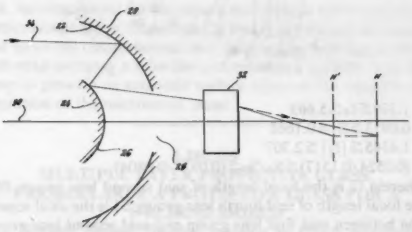
$E = 6.34843 \times 10^{-6}$.

4,240,702

FIELD CORRECTOR FOR TWO MIRROR OBJECTIVE SYSTEMS

Raul E. Casas, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 8, 1978, Ser. No. 940,743
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—200 **11 Claims**



1. In a two mirror optical system having a primary aspheric mirror with a primary reflecting surface and a secondary aspheric mirror with a secondary reflecting surface, said primary and secondary reflecting surfaces facing towards each other such that a ray incident to said primary reflecting surface is reflected towards said secondary surface, said ray then being reflected by said secondary reflecting surface back towards said primary reflecting surface, said primary mirror defining an aperture thereon, said aperture being so positioned that said ray reflected by said secondary reflecting surface passes through said aperture,

the improvement comprising a field group corrector having net negative power, said field group corrector being positioned behind said aperture to receive said ray passing through said aperture, said negative field group corrector having a characteristic aberration which is opposite in sign to the characteristic Petzval curvature aberration of said primary and secondary mirrors,

said negative field group corrector causing the object principal point (H) and the image principal point (H^1) to be located outside said negative field group corrector and disposed relative to said negative field group corrector to speed up the f number speed of said optical system,

whereby the total aberration of said optical system is corrected because of reduction of said Petzval curvature aberration by said opposite sign aberration of said negative field group corrector and the f number of the optical system is speeded up.

4,240,703

TELEPHOTO LENS

Kikuo Momiyama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,353
Claims priority, application Japan, Jun. 28, 1977, 52-76728
Int. Cl.³ G02G *9/62*; G02B *9/64*
U.S. Cl. 350—214 **9 Claims**

1. A telephoto lens comprising:

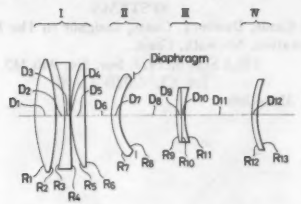
a first lens group consisting of a plurality of lenses, having a

positive refractive power and being fixed during the focusing of said telephoto lens;

a second lens group having a negative refractive power, positioned rearwardly of said first lens group and being fixed during the focusing of said telephoto lens;

a third lens group having a negative refractive power, positioned rearwardly of said second lens group and axially moving for focusing of said telephoto lens; and

a fourth lens group having a positive refractive power, positioned rearwardly of said third lens group; and characterized by the following relationships referring to a total focal length of unity:



$1.379 \leqq f_4 \leqq 5.663$

$0.0913 \leqq S_3 \leqq 0.1662$

$1.4345 \leqq |f_2| \leqq 2.307$

$(0.0524/0.1517) \leqq S_1/S_2 \leqq (0.0917/0.0804)$

wherein f2 is the focal length of said second lens group; f4 is the focal length of said fourth lens group; S1 is the axial separation between said first lens group and said second lens group; S2 is the axial separation between said second lens group and said third lens group; and S3 is the axial separation between said third lens group and said fourth lens group.

4,240,704

OBJECTIVE FOR VIDEO DISKS

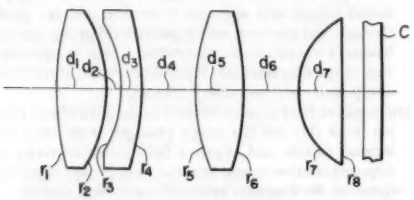
Atsuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1978, Ser. No. 962,804

Claims priority, application Japan, Nov. 29, 1977, 52-142166

Int. Cl.³ G02B 9/34

U.S. Cl. 350—220 **5 Claims**



1. An objective for video disks comprising a first, second, third and fourth lenses, said first lens being a biconvex lens, said second lens being a negative lens, said third lens being a positive lens, said fourth lens being a positive lens, said objective for video disks satisfying the following conditions:

$$0.75 < r_3/r_2 < 1.0 \quad (1)$$

$$0.8 < |r_3|/f < 1.1,\ r_3 < 0 \quad (2)$$

$$0.4 < r_7/f < 0.65 \quad (3)$$

$$0.2 < d_7/f < 0.4 \quad (4)$$

$$0 < d_2/f < 0.12 \quad (5)$$

$$1.1f < d_4 + d_5 + d_6 < 1.3f \quad (6)$$

$$-0.46 < f/r_6 < 0.08 \quad (7)$$

wherein reference symbol r_2 represents the radius of curvature of the surface on the second lens side of the first lens, reference symbol r_3 represents the radius of curvature of the surface on the first lens side of the second lens, reference symbol r_7 represents the radius of curvature of the surface on the third lens side of the fourth lens, reference symbol f represents the focal length of the lens system as a whole, reference symbols d_2, d_4 and d_6 respectively represent airspaces between the first and second lenses, between the second and third lenses and between the third and fourth lenses, reference symbols d_5 and d_7 respectively represent thicknesses of the third and fourth lenses, and reference symbol r_6 represents the radius of curvature of the surface on the fourth lens side of the third lens.

4,240,705

FIVE ELEMENT PHOTOGRAPHIC OBJECTIVE

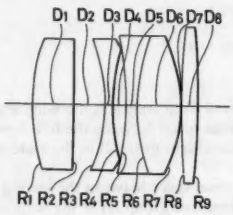
Kazuo Fujibayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,615

Claims priority, application Japan, Sep. 22, 1977, 52/114165

Int. Cl.³ G02B 9/34

U.S. Cl. 350—220 **4 Claims**



1. An objective lens system comprising, from front to rear, a positive first lens with the front surface convex toward the front, a bi-concave second lens, a positive third lens consisting of a negative element and a bi-convex lens element cemented together at their adjoining surface, and a bi-convex fourth lens, and fulfilling the following requirements:

$$0.595 \leqq |R_8| / |R_9| < 1.34, \text{ where } R_9 < 0 \quad (1)$$

$$0.0287f \leqq D_4 \leqq 0.0551f \quad (2)$$

$$0.095 \leqq N_1 - N_2 \leqq 0.156 \quad (3)$$

$$0.1669f \leqq D_5 + D_6 \leqq 0.20f \quad (4)$$

$$\frac{0.08}{f} \leqq \frac{N_4 - N_3}{R_6} \leqq \frac{0.29}{f} \quad (5)$$

$$0.5f \leqq |R_3| \leqq 0.53799f, \text{ where } R_3 < 0 \quad (6)$$

wherein f is the focal length of the entire lens system; Ri is the radius of curvature of the i-th surface counting from the front; Di is the i-th axial thickness or air separation; and Ni is the index of refraction of the i-th lens element.

4,240,706

OPTICAL PROBE

Joseph Douglas, Belper, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 13, 1979, Ser. No. 93,161

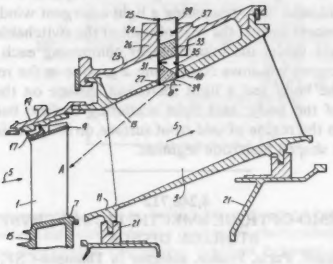
Claims priority, application United Kingdom, Dec. 8, 1978, 47764/78

Int. Cl.³ G02B 5/04

U.S. Cl. 350—286 **10 Claims**

1. An optical probe for observing an object within a fluid flow passage through a wall of said passage, said probe having an objective element for directing rays into an optical path within said probe thereby to observe, on said object, a location

which is offset from said optical path as notionally extended from said probe into said flow passage, wherein said objective element of said probe comprises objective prism means whose front and rear faces are inclined with respect to each other so that when said probe is positioned correctly with respect to said wall of said passage, said front face of said prism means lies substantially flush with the internal wall surface of said passage, the included angle between said front and rear faces of said prism means being such that, for rays of a preselected wavelength, said prism means refracts into said probe and along said optical path substantially only those rays which approach said front face at a preselected angle of incidence, said preselected angle of incidence being related to the position within said flow passage of said location to be observed.

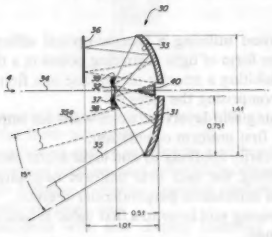


4,240,707

ALL-REFLECTIVE THREE ELEMENT OBJECTIVE

William B. Wetherell, Stoneham, and David A. Womble, Lunenberg, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Dec. 7, 1978, Ser. No. 967,535
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—294 **10 Claims**



7. An all-reflecting optical system for imaging distant objects, said optical system having an optical axis and comprising:

a. a positive concave primary mirror for receiving light from a distant object;

b. a negative convex secondary mirror for receiving light reflected from said primary mirror; and

c. a positive concave tertiary mirror for receiving light reflected from said secondary mirror and for, in turn, reflecting said light to an image plane for forming an image of said object thereat, wherein

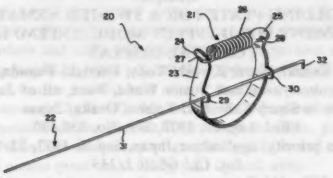
d. said primary mirror, and hence said optical system, has an eccentric field of view in that said field of view is entirely on one side of said optical axis, and wherein said image is also located entirely on one side of said optical axis.

4,240,708

MICROSCOPE REMOTE CONTROL FOCUS ATTACHMENT

William A. Bell, R.R.2, Heim Rd., Chandler, Ind. 47610

Filed Feb. 9, 1979, Ser. No. 10,813
Int. Cl.³ G02B *7/04*
U.S. Cl. 350—321 **4 Claims**



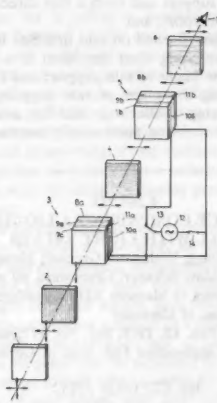
1. An attachment for focusing a microscope while operating a microscope stage, comprising a thin strap shaped to engage and drive the circumference at a microscope focusing control, said strap carrying a wire-like rod extending radially from the strap to provide an extended surface adjacent the controls for operation of the microscope stage.

4,240,709

MULTIPLE LAYER PROTECTIVE GLASS, PARTICULARLY A PROTECTIVE GLASS FOR A WELDING SHIELD

Ake Hörnell, Gagnef, Sweden, assignor to ESAB Aktiebolag, Gothenburg, Sweden

Filed Apr. 24, 1979, Ser. No. 33,011
Claims priority, application Sweden, Apr. 24, 1978, 7804630
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—335 **9 Claims**



1. A multiple layer protective glass, particularly a protective glass for a welding shield, for damping the light transmission, the layers of which are in turn comprised at least of a first polarizer, a first electrooptical cell, a second polarizer, a second electrooptical cell and a third polarizer, the electooptical cells consisting of liquid crystals enclosed between transparent parallel plates coated with electrically conducting layers, said crystals being arranged in their non-excited condition to form a helically twisted structure for rotating the plane of polarization of the passing polarized light, characterized by the fact that the planes of polarization of the first and the second polarizer (2, 4) are at right angles to each other, that the planes of polarization of the second and the third polarizer (4, 6) enclose an angle which is between 0° and 60°, the angle of rotation of

the helical structure formed by the liquid crystals in the second electrooptical cell (5) being between 90° and 30° and the said angle and the angle of rotation being complementary angles, and means (13) for exciting the two electrooptical cells (3, 5) in opposite modes by the application of a voltage between the conducting layers (10*a*, 11*a*; 10*b*, 11*b*) of the electrooptical cell.

4,240,710

HOLDING PLATE FOR A TWISTED NEMATIC ALIGNMENT FIELD EFFECT MODE (TNFEM) LIQUID CRYSTAL DISPLAY

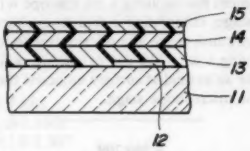
Syuichi Kozaki, Nara; Kiyoshi Toda; Fumiaki Funada, both of Yamatokoriyama, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1978, Ser. No. 938,480

Claims priority, application Japan, Sep. 6, 1977, 52/107425

Int. Cl.³ G02F 1/133

U.S. Cl. 350—339 R **24 Claims**



1. A holding plate for a twisted nematic field effect mode liquid crystal display comprising:

a support;

conductive electrodes formed on said support;

a SiO_2 layer formed over said support and said conductive electrodes;

a first SiO layer formed on said SiO_2 layer, said first SiO layer being slant deposited at a first acute angle from the plane of said support and from a first direction along the plane of said support; and

a second SiO layer formed on said first SiO layer, said second SiO layer being slant deposited at a second acute angle from the plane of said support and from a second direction along the plane of said support, said second acute angle being smaller than said first acute angle, said second direction being substantially normal to said first direction.

4,240,711

DISPLAY DEVICE COMPRISING A LIQUID CRYSTAL CELL WITH LIGHT VALVES

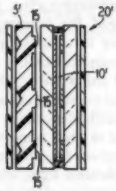
Günter Baur, Freiburg; Waldemar Greubel; Hans Krüger, both of Munich, and Alois Schauer, Gruenwald, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,366

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706355

Int. Cl.³ G02F 1/133

U.S. Cl. 350—345 **5 Claims**



1. In a device having a light valve containing a medium which can be switched zone-wise between at least two different optical states, the zone-wise switching being between character shaped electrode segments on one surface of said medium and an electrode of the opposite surface of said medium, a light trap in the form of a plate-shaped body disposed behind the medium of the light valve when taken in the direction of observation of the device, said body consisting of a material having an index of refraction greater than 1 and containing fluorescent particles emitting a fluorescent light when exposed to an excitation light, said body possessing a light emergent window for the fluorescent light at the rear of each of the switchable zones of the light valve, the improvement comprising each of the light emergent windows comprising a groove in the rear surface of the body and a light scattering surface on the front surface of the body, said light scattering surface being restricted to the region of said front surface directly behind said character shaped electrode segment.

4,240,712

THERMO-OPTIQUE SMECTIC LIQUID-CRYSTAL STORAGE DISPLAY

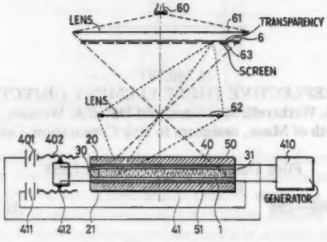
Lydie Thirant, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 867,459, Jan. 6, 1978, abandoned, which is a continuation of Ser. No. 643,866, Dec. 23, 1975, abandoned. This application Feb. 2, 1979, Ser. No. 9,092

Claims priority, application France, Dec. 24, 1974, 74 42640

Int. Cl.³ G02F 1/133

U.S. Cl. 350—351 **21 Claims**



1. A method utilizing a thermo-optical effect for storing images in the form of light scattering points in a thin layer of a material exhibiting a smectic mesophase in a first temperature range and comprising the steps of:

(a) enclosing said layers between walls for imposing to said layer a first uniform orientation;

(b) temporarily applying to said layer a first electric field for substituting for said first uniform orientation a second uniform orientation perpendicular thereto;

(c) maintaining said layer to a first value in said first temperature range;

(d) temporarily raising the temperature of at least parts of said layer from said first value to a second value in said first temperature range.

4,240,713

ELECTRODE BARRIER LAYER FOR HYDROGEN-COLORED ELECTROCHROMIC DISPLAYS

Marshall Leibowitz, Ridgefield, Conn., assignor to Timex Corporation, Waterbury, Conn.

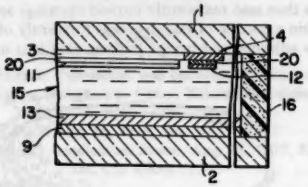
Filed Nov. 8, 1978, Ser. No. 958,903

Int. Cl.³ G02F 1/17

U.S. Cl. 350—357 **12 Claims**

1. In an electrochromic display comprising a first substrate with a transparent metal oxide electrode and image-forming electrochromic layer thereon, a second spaced substrate with a

counter electrode and an ion-conducting layer between the substrates, wherein coloration of the electrochromic layer is attributed to the incorporation of protons in the layer under the influence of an applied electrical field with the attendant generation of some harmful atomic hydrogen therein, the improvement for increasing the useful life of the display comprising:



a transparent hydrogen barrier layer disposed between the metal oxide electrode and associated electrochromic layer for minimizing destructive reaction between said electrode and atomic hydrogen resulting from coloration of the electrochromic layer, said barrier layer being electron permeable under the influence of the applied field so that electrons necessary for coloration can pass between the electrode and electrochromic layer.

4,240,714

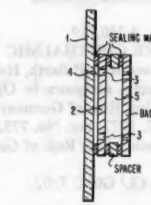
EXTENDED LIFE ELECTROCHROMIC DISPLAY CELL

Clayton V. Wilbur, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,055

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **5 Claims**



1. An electrochromic display cell comprising:

a transparent front electrode;

a back electrode in spaced relation to said front electrode;

means positioned between said front electrode and said back electrode defining a display chamber containing an electrochromic solution; and

means associated with said display chamber providing a reservoir confining said electrochromic solution and means to permit the continuous flow of said solution between said reservoir and said chamber during usage.

4,240,715

GRAPHIC SYMBOL LINE POSITION CONTROL MEANS FOR HIGH SPEED PRINTING

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Apr. 2, 1979, Ser. No. 26,420

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ G02F *1/33*

U.S. Cl. 350—358 **3 Claims**

1. In a graphic symbol line position control means,

a laser source of light;

font plate means for providing an array of graphic symbols and means for exposing symbols of said array, selectively, to light from said laser source for providing any one of a plurality of individual graphic symbol shaped sources of light;

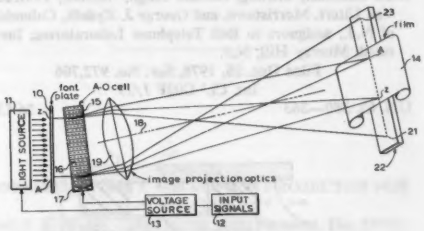
a light responsive record medium;

said array of graphic symbols and said record medium positioned, respectively, at first and second ends of graphic symbol shaped light beam optical paths of said line position control means;

optical means positioned along an optical axis of said line position control means intermediate said array of graphic symbols and said record medium for projecting an image of a graphic symbol selectively exposed to light from said laser source toward said record medium;

acousto-optic light reflector means, including acoustic wave generator means and an interaction medium, positioned intermediate said array of graphic symbols and said optical means positioned along said optical axis;

a source of ultrasonic frequency voltages and means for connecting voltages from said source to said light reflector means for an establishing of any of a number of different acoustic wave light reflecting conditions within said light reflector means; wherein the improvement comprises:



(a) means for exposing a predetermined one of said graphic symbols of the array to light from said laser source and establishing, simultaneously, a predetermined one of said light reflecting conditions within said light reflector means, said established light reflecting condition controlling a directing of light from said predetermined one of said symbols to said record medium and an exposing of said medium to a light image of said symbol so as to effect a coinciding of said image with a point of reference display position at said record medium;

(b) means for exposing another predetermined one of said graphic symbols of the array to light from said laser source and establishing, simultaneously, another predetermined one of said light reflecting conditions within said light reflector means, said other established light reflecting condition controlling a directing of light from said other predetermined one of said symbols to said record medium and an exposing of said medium to a light image of said other symbol so as to effect a coinciding of said image with any one of a plurality of secondary display positions in relation to said point of reference display position at said record medium.

4,240,716

ELECTRODEPOSITION DISPLAY DEVICE

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Columbia, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1978, Ser. No. 969,773

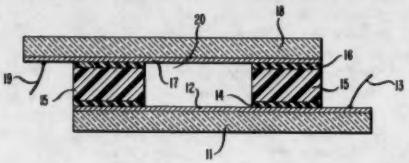
Int. Cl.³ G02F *1/29*

U.S. Cl. 350—363 **20 Claims**

1. An electrodeposition display system comprising:

(a) positive and negative electrodes;

(b) electrolyte comprising organic solvent, silver-containing ionic species, and a mixed opacifier; in which electrical activation of the positive and negative electrodes produces an electrical action which leads to electrodeposition



of a partially opaque silver species thereby altering the optical contrast of the display characterized in that the opacifier comprises a solid semiconducting substance and a solid insulator substance which are light in color and chemically compatible with the electrolyte.

4,240,717

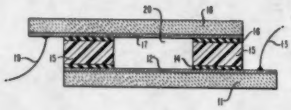
ELECTRODEPOSITION DISPLAY DEVICE

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Columbia, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 972,706

Int. Cl.³ G02F *1/29*

U.S. Cl. 350—363 **26 Claims**



1. An electrodeposition display comprising:

(a) positive and negative electrodes;

(b) electrolyte comprising organic solvent, silver-containing ionic species and ionic species containing at least one element selected from the group consisting of iodine, bromine and chlorine in which electrical activation of the positive and negative electrodes produces an electrical action which leads to electrodeposition of a partially opaque silver species thereby altering the optical contrast of the display; CHARACTERIZED IN THAT the electrolyte comprises substituted ammonium halide selected from the group consisting of substituted ammonium iodide, substituted ammonium bromide and substituted ammonium chloride.

4,240,718

SPORTS SPECTACLE STRUCTURE

Max F. Wichers, Main Mall, White Lakes Center, 3636 Topeka Blvd., Topeka, Kans. 66611

Filed Jan. 26, 1978, Ser. No. 872,683

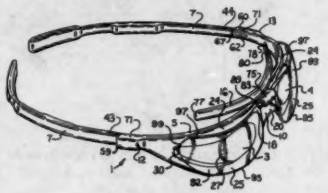
Int. Cl.³ G02C *11/08, 3/00*

U.S. Cl. 351—62 **8 Claims**

1. A spectacle structure for use in sports and the like to protect the wearer's eyes from moving objects comprising:

(a) a wrap-around front frame member having portions curvingly extended around the front of the head and rearward of the eyes of a person wearing the spectacle structure at a level adjacent to the eyes, said front frame member having portions for engaging selected areas of the front of the person's head and including a centrally positioned bridge portion with respective slightly elastically resilient upper and lower bow portions extended laterally outwardly therefrom and curved rearwardly in converging relation and joining in rearwardly positioned end portions, said bow portions being separated and forming spaced apart guard members defining elongated, rearwardly curved, generally tear-drop shaped openings extending rearward of the eyes of a person wearing the spectacle structure and permitting vision therethrough with the guard members protecting a person's eyes from large objects;

(b) lens means having substantially lesser curved horizontal axes than said rearwardly curved openings and mounted within a portion of said openings forwardly of a wearer's eyes adjacent said bridge portion, said lens means being



contractively supported by said upper and lower bow portions, said openings having substantial space portions not covered by the area of the lens means and extending in curved relation outwardly and rearwardly of said lens means exposing a lateral end of said lens means; and

(c) head engaging means connected to said end portions of said front frame member and extending rearwardly therefrom and cooperating with said front frame portions for engaging selected areas of the person's head for maintaining said front frame member in position on the wearer's head and the lens means in aligned position relative to the person's eyes.

4,240,719

PROGRESSIVE OPHTHALMIC LENS

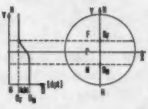
Gunter Guilino, Munich, and Rudolf Barth, Hohenkirchen, both of Fed. Rep. of Germany, assignors to Optisch Werke G. Rodenstock, Munich, Fed. Rep. of Germany

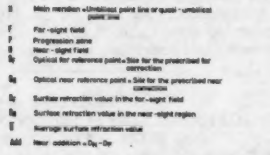
Filed Mar. 7, 1977, Ser. No. 775,391

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610203

Int. Cl.³ G02C *7/02*

U.S. Cl. 351—169 **18 Claims**





1. In an Ophthalmic lens with a surface which has a far-sight field with surface refraction values corresponding to far sight in its upper region, a near-sight field which has surface refraction values corresponding to near sight in its lower section, is divided into left and right sections by a main meridian, the points of which are least approximate umbilical points wherein a progression zone is provided between the upper region continuously changing into the surface refraction values of the

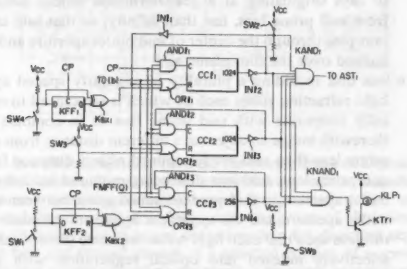
lower section, with lines of equal average surface refraction value intersecting the main meridian in the upper and lower sections being extended on both ends to the periphery of the ophthalmic lens, the improvement wherein at least one portion of the points of the main meridian have a finite difference between the two main curvatures which amounts to more than $0.01/(n-1)100$ and less than $0.25/(n-1)100$ cm^{-1} where n is index of refraction.

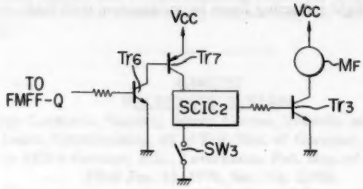
4,240,720

MOTION PICTURE CAMERA

Noritsugu Hirata, Yokohama, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1978, Ser. No. 934,335
Claims priority, application Japan, Aug. 23, 1977, 52-101260
Int. Cl.³ G03B *31/02*
U.S. Cl. 352—170 **2 Claims**





1. A motion picture camera comprising:
(a) film feeding means including a motor-driven intermittent feed mechanism and a continuous feed mechanism;
(b) loop sensing means for sensing the length of film loop between said intermittent feed mechanism and said continuous feed mechanism to output different signals in accordance with the film loop length;
(c) motor-speed control means for changing over the speed of an intermittent film feed motor in accordance with the signal from said loop sensing means;
(d) control means adapted to output a signal when the signal from said loop sensing means is maintained at a predetermined value for a predetermined time period; and
(e) means for stopping said motor in accordance with the signal from said control means.

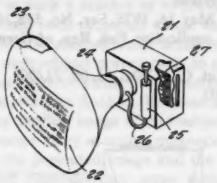
4,240,721

COOKING WITH RECIPES THROUGH IMPROVED VIEWING MACHINE OR WALL SCREEN PROJECTION

Paul A. Drop, Sr., 16850 Alcross, Covina, Calif. 91722

Filed Apr. 19, 1979, Ser. No. 31,617
Int. Cl.³ G03B *21/10, 21/58*
U.S. Cl. 353—74 **2 Claims**

1. A means of cooking with projected recipes, comprising, in combination, a projector containing a lamp therewithin, a lens opening at its front fitted with a lens, a slide receivable in said projector, a recipe printed on said slide, so that light rays from said lamp project an image of said recipe outwardly of said lens, and a screen upon which said image is projected; said



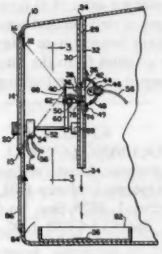
screen comprising an inflatable transluscent balloon having a neck portion mounted around said lens, and a hand-operated air pump mounted on said projector, said air pump being connected by a hose to said neck portion of said balloon, for selective size of inflation of said balloon and said image thereupon.

4,240,722

INFORMATION DATA MICROFILM PROJECTOR FOR VEHICLES

Frederick R. Brecht, 3241 Duncan Ave., Sarasota, Fla. 33579

Filed Feb. 1, 1979, Ser. No. 8,411
Int. Cl.³ G03B *21/10*
U.S. Cl. 353—12 **7 Claims**

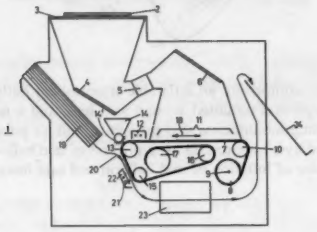


1. A vehicular information data display system comprising a rear projection screen, a gravity chute having a portion disposed substantially parallel to said rear projection screen, an aperture window in said chute, an illumination device mounted on said chute behind said aperture window, a lens system mounted on said chute in front of said aperture window, said illumination device, aperture window and lens system being optically substantially aligned with the center of said rear projection screen, a transparency card bearing information data indicia and adapted to be gravity fed in said chute, means for arresting said transparency card in said chute in register with said aperture window, and means for turning "on" and "off" said illumination device and for turning "on" and "off" said arresting means, wherein said window aperture, illumination device and lens system are disposed along an optical axis eccentric relative to the center line of said chute for projecting on said screen a lateral half of said transparency card.

4,240,723
PROCESS FOR ELECTROGRAPHIC IMAGE PRODUCTION AND AN APPARATUS FOR CARRYING OUT THIS PROCESS

Gabor Forgo, Zurich, Switzerland, assignor to Elfotec A.G., Zumikon, Switzerland

Filed May 16, 1975, Ser. No. 578,249
Claims priority, application Fed. Rep. of Germany, May 20, 1974, 2424350
Int. Cl.[3] G03G *15/00, 21/00*
U.S. Cl. 355—3 DD 4 Claims



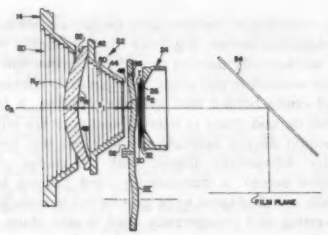
1. A process for electrographic image production, in which a latent image on an intermediate image carrier capable of being developed with a toner is developed with a one component toner and said intermediate image carrier is cleaned, comprising both developing the latent image on the intermediate image carrier and also cleaning the intermediate image carrier with at least one magnetic brush in the absence of applied voltage, wherein a magnetic one-component toner comprising a core of at least magnetizable material covered by a layer of only limited conductivity is used to form the brush-form coating on the magnetic brush.

3. An apparatus for carrying out the process according to claim 1, wherein at least one magnetic brush (14,25), includes a brush-like coating (14',25') comprising a magnetic one-component toner comprising a core of at least magnetizable material covered by a layer of only limited conductivity is provided for developing a latent image on an intermediate carrier and for removing toner residues from the intermediate image carrier, both in the absence of applied voltage.

4,240,724
ZONE FOCUSING OPTICAL SYSTEM

Bruce K. Johnson, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Oct. 1, 1979, Ser. No. 80,433
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—197 8 Claims



1. A zone focusing optical system for use with photographic camera apparatus of the type which includes means for facilitating the positioning of film in a plane in which it may be exposed and providing a path of predetermined length along which light can be directed through an entrance aperture thereof toward the plane, said system comprising:

means for defining an opaque housing structured to admit light from a scene into the apparatus light path entrance, said housing including an open-ended section having spaced apart inlet and outlet apertures optically aligned with respect to one another and with the apparatus light path entrance along an axis which extends through the center of the apparatus light path entrance, said section including intermediate opaque convergent portions which connect said inlet and outlet apertures thereof for excluding light from entering said housing, said outlet aperture being positioned adjacent the apparatus light path entrance and spaced forwardly thereof by a predetermined distance;

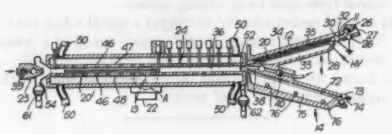
a prime lens of predetermined positive power mounted in optical registration with said inlet aperture and structured to refract all the chief rays from all image forming bundles of rays originating at a predetermined object distance from said prime lens, less than infinity, so that said chief rays pass through the center of said outlet aperture and are imaged over the film plane; and

a lens disk including a plurality of angularly spaced apart light refracting zones each of which is structured to optically cooperate with said prime lens to in combination therewith image an object at a different distance from said prime lens than said predetermined object distance from said prime lens, said lens disk being mounted behind said outlet aperture in said predetermined space between said outlet aperture and the apparatus light path entrance for rotation such that each light refracting zone thereof can be selectively indexed into optical registration with said outlet aperture, said outlet aperture operating to define the active light refracting area of each of said light refracting zones and to define a maximum aperture stop for each of said light refracting zones in combination with said prime lens.

4,240,725
ELECTROSTATIC CAMERA

Harry A. H. Spence-Bate, Morley, Western Australia 6062, Australia, and Timothy Bain-Smith, Charing, England, assignors to Harry Arthur Hele Spence-Bate, Morley, Australia

Filed Nov. 21, 1979, Ser. No. 96,516
Claims priority, application United Kingdom, Nov. 30, 1978, 46704/78
Int. Cl.[3] G03B *17/50, 26/42, 27/60;* G03G *15/00*
U.S. Cl. 354—3 11 Claims



1. A recording camera having a camera lens, plates mounted to the camera in the region of the lens, said plates defining a gas cushion chamber, means for maintaining a cushion of gas in said chamber so as to support a film in a plurality of X and Y positions relative to said lens, means for moving said film across said chamber to any of the plurality of X and Y positions and means for directing at least one imaging fluid on to said film within said chamber after exposure.

4,240,726
PHOTOGRAPHIC APPARATUS WITH AUTOMATIC FOCUSING MEANS

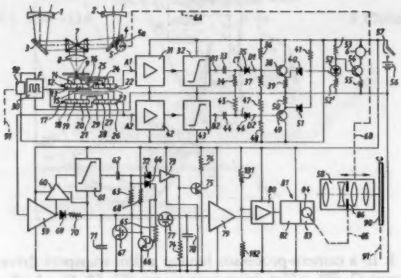
Richard Wick, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,495

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705104

Int. Cl.³ G03B *3/10, 7/08*

U.S. Cl. 354—25 **3 Claims**



1. In a photographic apparatus, the combination of exposure control means; focusing means; monitoring means including first and second generating means for generating first and second signals, each including a separate group of photosensitive elements; a split image optical system for directing separate first and second images of a selected portion of a scenen onto said groups of said photosensitive elements, respectively; first adjusting means for simultaneously adjusting said focusing means and said optical system in dependence on said first and second signals; and second adjusting means for adjusting said exposure control means in dependence only on said first signals.

4,240,727
FOCUSSING SYSTEM

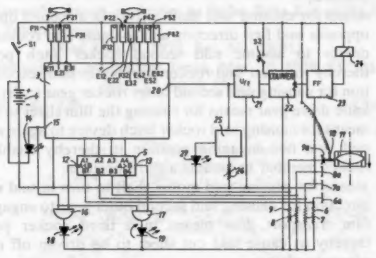
Peter Lermann, Narring; Istvan Cocron, Münich, and Günter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,938

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801393

Int. Cl.³ G03B *3/10*; G01C *3/08*; H01J *40/14*

U.S. Cl. 354—25 **4 Claims**



1. A focussing system for a photographic camera having a camera objective which is adjustable to a number of different subject-distance settings, comprising:

a first photodetector array fixed to the camera and including a first plurality of adjoining photodetectors;

a second photodetector array fixed to the camera and including a second plurality of photodetectors, the second plurality exceeding the first plurality by a number dependent upon the number of different subject-distance settings of the objective;

first optical means fixed to the camera and operative for projecting an image of a subject onto the first photodetector array in such a manner as to prevent any substantial shift between such projected image and the photodetectors in the first photodetector array when objective distance to such subject corresponds to one of the subject-distance settings to which the objective may be adjusted;

second optical means fixed to the camera and operative for projecting another image of said subject onto the second photodetector array in such a manner as to induce a shift between the projected image and the photodetectors of the second photodetector array with such shift being dependent upon that one of the subject-distance settings which corresponds to objective distance to said subject;

a signal-evaluating circuit connected to all photodetectors in the first and second photodecetor arrays in such a manner as to divide the photodetectors in the second photodetector array into a successive plurality of groups, each such group including a like number of adjoining photodetectors and overlapping an adjoining group by a like number of photodetectors, whereby each such group corresponds to a respective one of the subject-distance settings of the objective,

the signal-evaluating circuit including an averager, a subtractor, a comparator and a comparison evaluator, the averager generating an average signal representing an average of all output signals produced by all photodetectors in the second photodetector array, the subtractor subtracting the average signal from each output signal from each photodetector to produce corresponding intermediate signals associated with the photodetectors, the comparator comprising an intermediate signal associated with each individual photodetector in the first photodetector array with an intermediate signal associated with an individual photodetector within each group of photodetectors in the second photodetector array and producing a plurality of difference signals each characteristic of a corresponding comparison, and the comparison evaluator evaluating all such difference signals and selecting that difference signal in which the intermediate signals best approximate each other, whereby a best corresponding group and a corresponding best subject-distance setting of the objective are identified.

4,240,728
PHOTOGRAPHIC CAMERA SHUTTER ELECTROMAGNETIC SYSTEM FOR CONTROLLING PHOTOGRAPHIC LIGHT ADMITTED TO CAMERA

Erwin Wiedmann, Essingen, and Horst Stacklies, Aalen, both of Fed. Rep. of Germany, assignors to Prontor-Werk Alfred Gauthier GmbH, Wildbad, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 918,870

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728824

Int. Cl.³ G03B *7/08, 9/00*; H02K *41/02*

U.S. Cl. 354—38 **34 Claims**

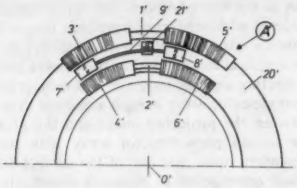
1. Photographic camera light admitting apparatus comprising

drivable control means arranged for reciprocal movement along a path for controlling the photographic light admitted to the camera, and

an electromagnetic driving system arranged for reciprocally driving the control means,

the electromagnetic driving system including an assembly having separate correspondingly opposed coacting reciprocally oppositely energizable electromagnetic field coil means stationarily arranged in substantially commonly coextensive linearly extending and transversely spaced apart relation and defining an intervening correspond-

ingly linearly extending magnetic field space therebetween, and movable permanent magnet means arranged correspondingly bilaterally between the correspondingly opposed coacting stationary field coil means for reciprocal movement linearly along and through such intervening field space bilaterally between such opposed station-



ary field coil means in response to the corresponding opposite energization of the stationary field coil means and operatively connected for driving the control means concordantly along such path, whereby to control the photographic light admitted to the camera in dependence upon the energization of the field coil means.

4,240,729

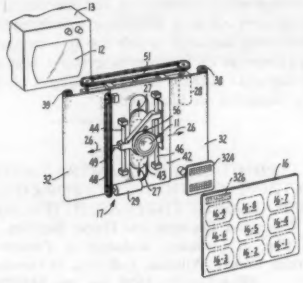
MULTIPLE IMAGE CAMERA

Howard H. Barney, Los Altos Hills, Calif., assignor to Dunn Instruments, Inc., San Francisco, Calif.

Continuation of Ser. No. 619,450, Oct. 3, 1975, Pat. No. 4,027,315. This application Feb. 14, 1977, Ser. No. 768,688 The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.

Int. Cl.³ G03B *29/00*

U.S. Cl. 354—76 **10 Claims**



1. Apparatus for photographing a plurality of displays onto a sheet of film, comprising

a lens adapted to receive light from a display tube;

holder means for holding a sheet of film a spaced distance from said lens; and

positioning means for relatively moving said lens and said holder means into a plurality of desired juxtapositions whereat said lens projects an image of the display on said display tube onto the film in a plurality of corresponding positions, said positioning means comprising first and second photoelectric position signal generating means for producing first and second position signals representing the actual juxtaposition of said lens and said holder means in a first coordinate direction and a second coordinate direction.

4,240,730

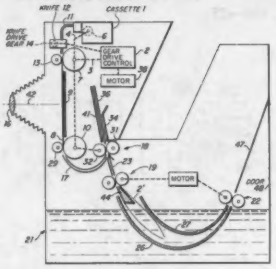
UNIQUE GEAR DRIVE MECHANISM FOR CAMERA-PROCESSOR

Dennis Dodge, Amherst, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 10, 1979, Ser. No. 83,428

Int. Cl.³ G03B *17/50*

U.S. Cl. 354—90 **8 Claims**



1. In a camera-processor having a film transport drive gear means (**7, 69**), a film drive gear means (**57, 58, 6**), a knife drive gear means (**64, 67, 14**), an exposure station (**8, 9**), an improved gear drive control means comprising:

a. a rocker (**5**) having a centrally mounted gear (**52**) thereon and first and second outer gears (**56, 54**) mounted thereon and positioned to be in engagement with said centrally mounted gear;

b. motor means **38** having a shaft (**51**) for rotating said centrally mounted gear via shaft coupling means (**50**) which also tends to cause rotation of said rocker in the same direction as the direction of rotation of said shaft;

c. motor control means (**55**) for rotating said shaft in a first direction to cause said first outer gear to drive said transport drive gear means and simultaneously cause said second outer gear to drive said film cassette drive gear means when said rocker member assumes a first position, thereby to drive said film from said cassette and to actuate said transport drive gear means;

d. a rocker latch device (**63, 65, 71**), which unblocks the path of motion of said first outer gear when said rocker latch device assumes a first non-engaging position which blocks the path of motion of said first outer gear when said rocker latch device assumes a second engaging position;

e. rocker latch control means (**60**) for causing said rocker latch device to selectively assume said first or second position;

f. means for causing said shaft to turn in a second direction opposite said first direction and to cause said rocker latch device to assume said second rocker latch position, thereby to arrest said rocker member in said second position for causing said second outer rocker gear to drive said knife drive gear means for causing the film sheet to be cut;

g. means for causing said rocker latch device to again assume said first non-engaging position to thereby enable said rocker member to assume a third position;

h. means for causing said motor shaft to turn in said second direction for causing said second outer gear to engage said film transport gear means in a third rocker position thereby to cause said cut sheet to be driven off of said exposure platen;

i. means for causing said motor shaft to turn in said first direction while said rocker device is maintained in said third position by said rocker latch device for causing said transport gear means to reverse direction to rewind said belt;

j. means for rotating said motor shaft in said first direction to rotate said rocker from said third position in said first direction to said first position while said rocker latch

device again assumes said first non-engaging latch position.

4,240,731

STEREOSCOPIC CAMERA

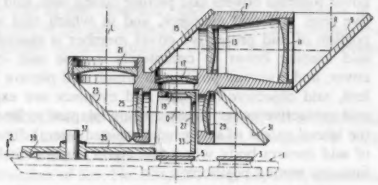
Giovanni M. Staffieri, 6933 Muzzano, Switzerland

Continuation-in-part of Ser. No. 808,696, Jun. 21, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,230

Claims priority, application Switzerland, Jun. 24, 1976, 8060/76

Int. Cl.³ G03B *35/00*

U.S. Cl. 354—114 **8 Claims**



1. A stereoscopic camera for taking stereoscopic photographs in pairs in side-by-side zones on photograhic film, comprising two lens systems and mirror means, each lens system comprising a plurality of lenses of which at least two are disposed at right angles to each other, said mirror means comprising, for one lens system, two oblique mirrors with at least one lens therebetween and an objective lens that follows the last of said two mirrors and whose axis is parallel to the line of sight of the camera, the mirror means for the other lens system comprising two oblique mirrors oppositely inclined to the first two mirrors and having an objective lens between them which is the last lens of the system and which is disposed at right angles to the first-mentioned objective lens.

4. A stereoscopic camera for taking stereoscopic photographs in pairs in side-by-side zones on photographic film, comprising two lens systems and mirror means, each lens system comprising a plurality of lenses of which at least two are disposed at right angles to each other and a pair of diaphragms whose axes are disposed at right angles to each other, one said diaphragm being coaxial with each of said objective lenses.

4,240,732

FLASH SYSTEM CHANGEOVER DEVICE FOR THE SHUTTER OF CAMERA

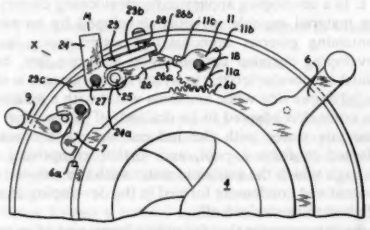
Yukio Morino; Shogo Kato, and Masanori Watanabe, all of Shikawatshi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,912

Claims priority, application Japan, Mar. 10, 1978, 53/281307

Int. Cl.³ G03B *15/03*

U.S. Cl. 354—138 **5 Claims**



1. A flash system changeover device for a shutter wherein the exposure operation is performed by cancelling the retention on a shutter blade control member in the charged state by the operation of an actuating member which has previously been charged and is actuated by a shutter release operation, the device comprising: a flash system switchover member, a switching member, a synchronizing switch, and means oscillatably mounting said switching member on the changeover member to close the synchronizing switch in connection with the operation of said actuating member when said flash system changeover member is set at a first position and also so as to close said synchronizing switch in connection with the shutter blade opening operation of said shutter blade control member when said flash system changeover member is set at a second position, and wherein the synchronizing switch has contacts having relative positions which are independent of the position of the changeover member when the synchronizing switch is in the open state.

4,240,733

MOTOR DRIVEN CAMERA HAVING A DETACHABLE DRIVE UNIT

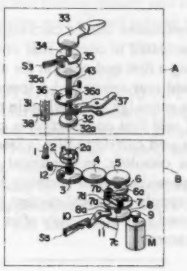
Hiroshi Ueda, Nara; Takayoshi Miyamoto, and Masatake Niwa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1978, Ser. No. 948,768

Claims priority, application Japan, Oct. 5, 1977, 52/118994; Nov. 29, 1977, 52/142251

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **19 Claims**



1. A motor driven camera having a detachable drive unit including a motor, a motor drive electrical circuit for driving said motor and interconnecting means connected to said motor, the camera comprising:

a shutter;

a manual release member movably mounted on said camera;

a shutter release means engageable by said release member for releasing said shutter upon movement of said release member;

a film wind-up and shutter charge mechanism connected with said motor via said interconnecting means to be operated by said motor with said drive unit being attached to said camera, said shutter charge mechanism including a reciprocable member capable of reciprocating between an initial position and an operative position at which a film wind-up and a shutter charge is completed;

means for disconnecting said interconnecting means from said motor when said reciprocable member reaches said operative position;

means for biasing said reciprocable member to said initial position so that said reciprocable member is returned to said initial position due to the disconnection of said interconnecting means from said motor;

means for generating an electrical signal for actuating said motor drive circuit upon termination of an exposure;

a manual selector mounted on said camera for movement

between a single frame photographing position and a continuous photographing position; and

a control mechanism engageable with said selector and said manual release member for deactivating said signal generating means to prevent the generation of said signal when said manual release member is kept at the moved position with said selector being set at said single frame photographing position.

4,240,734

MOTOR-DRIVE CAMERA USING A CARTRIDGE FILM

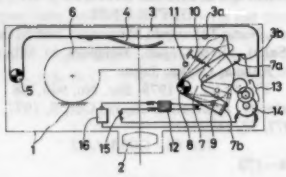
Katsuhiko Nomura, Kawagoe, and Keisuke Haraguchi, Ranzan, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,866

Claims priority, application Japan, Sep. 26, 1978, 53/131965[U]

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **7 Claims**



1. A motor-drive camera using a cartridge film comprising a coupled member actuated to open a rear cover of said camera, said member having a first end portion for abutment against an inner surface of said rear cover and a second end portion for abutment against a cartridge body wherein the position against said rear cover of said first end portion is changed depending on whether or not said cartridge film is loaded in said camera and switch means coupling an electrical current supply to motor-drive means said coupled member being to close said switch means and supply electrical current to said motor-drive means by closure said rear cover only after said cartridge film is loaded in said camera.

4,240,735

PROTECTIVE COVER FOR TAKING LENS OF CAMERA

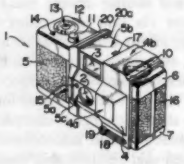
Yoshihisa Maitani, Hachioji, and Toyotaka Yamada, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,776

Claims priority, application Japan, Jan. 18, 1978, 53-3940

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—288 **15 Claims**



1. A camera comprising:

a camera body including spaced front and rear surfaces separated by top and bottom surfaces and lateral end surfaces, the lateral end surfaces being spaced to define a predetermined lateral dimension of said camera body;

a picture taking lens disposed in said front surface of said camera body;

a finder optical system including an objective lens and an eyepiece respectively disposed in said camera body;

a loading cover for loading and unloading film in said camera body, said loading cover being disposed in said rear surface of said camera body;

a protective cover member separate from said camera body and including first and second spaced portions which extend at least partially along said front and rear surfaces of said camera body respectively;

mounting means for slidably mounting said protective cover member for lateral movement on the exterior of said camera body so that said cover member is laterally slidably movable between a first position in which said protective cover member covers said picture taking lens, said objective lens, and said eyepiece, and in which said second portion of said protective cover member is spaced from said loading cover to completely expose said loading cover, and a second position in which said picture taking lens, said objective lens and said eyepiece are exposed, said protective cover member being adapted to lie within the lateral extent of said predetermined lateral dimension of said camera body when said cover member is in said first and second positions.

4,240,736

DEVELOPING APPARATUS FOR DIAZOTYPE MATERIAL, ESPECIALLY FOR USE IN A PHOTOPRINTING MACHINE

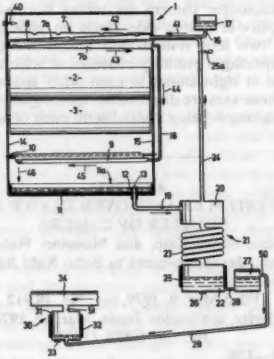
Herbert Schröter, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,790

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656901

Int. Cl.³ G03D *13/00*

U.S. Cl. 354—299 **10 Claims**



1. In a developing apparatus for developing diazotype copying material capable of being developed by an atmosphere containing gaseous ammonia and water vapor, including a developing chamber comprising at least one first, heated, inclined evaporator trough to which fresh ammonia is adapted to be fed at one side while ammonia water with a reduced ammonia content is adapted to be drained off at the other side, the ammonia water with the reduced ammonia content being adapted to form a pool, and further comprising a siphon through which the ammonia water with the reduced ammonia content and condensate formed in the developing chamber are adapted to be drained off,

the improvement that the siphon forms part of an evaporator arranged outside of the developing chamber from which a developer gas pipe leads into the developing chamber,

a heated reservoir for the ammonia water with the reduced

ammonia content adapted to flow from the evaporator trough, the reservoir substantially covering the entire floor space of the developing chamber and being completely open at its top, having an opening which leads to the outside evaporator and being positioned in the chamber at such a level that the bottom of the reservoir is adapted to be completely covered by the pool of ammonia water with reduced ammonia content,

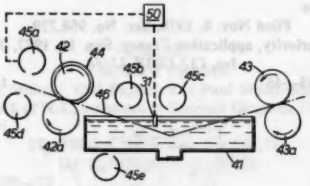
guiding means for the copying material to be developed, and said reservoir being designed as a body which is separate from the bottom of the developing chamber and is positioned above the bottom of the developing chamber and below the guiding means for the copying material; further including a socket in the reservoir and opening above the bottom of the reservoir, and a pipe connection in the bottom of the developing chamber for the ammonia water with the reduced ammonia content and for condensate.

4,240,737

PROCESSING OF RADIATION SENSITIVE DEVICES

Leslie E. Lawson, Orpington, England, assignor to Vickers Limited, London, England

Continuation of Ser. No. 934,029, Aug. 16, 1978, abandoned.
This application Jun. 4, 1979, Ser. No. 45,590
Int. Cl.³ G03D *13/00*
U.S. Cl. 354—299 **9 Claims**



1. An apparatus for processing image-wise exposed radiation sensitive material which apparatus comprises:

(i) a container for developer liquid;

(ii) a means for contacting the material with the developer liquid;

(iii) a temperature sensitive member for sensing the temperature of the developer liquid and for producing an output signal in dependence on that temperature; and

(iv) a source of actinic radiation arranged in or adjacent to the apparatus so that the processing effected by the apparatus includes subjecting the material to an overall exposure prior to or during its contact with the developer liquid, the output signal being arranged to control the extent to which the material is subjected to said overall exposure.

4,240,738

LIGHT MIXING SYSTEM FOR A PHOTOGRAPHIC ENLARGER

Michael F. Praamsma, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

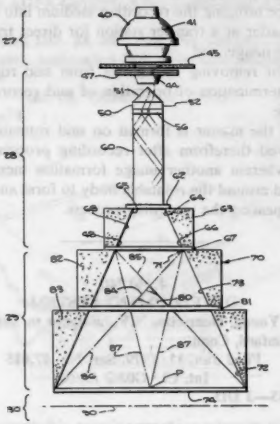
Filed Jun. 14, 1979, Ser. No. 48,621
Int. Cl.³ G03B *27/76, 27/72, 27/00*
U.S. Cl. 355—1 **14 Claims**

1. In a light mixing system adapted to receive from a light source, beams of light with non-uniform random energy distribution and to mix said light beams to provide substantially uniform energy distribution at the outlet port of said system, the combination of:

a lens means having a conical surface to receive said light beams and to direct said light beams each along a path at an angle to the axis of said conical surface;

a fiber optic diffuser means comprising

a plurality of fiber optic elements each receiving light beams along said angular path, each element transmitting and reflecting said light beams, and causing each light beam to depart the exit end of said element in the form of an expanding cone of substantially the same angle as that of the



light beams at the lens means for mixing said light beams; and

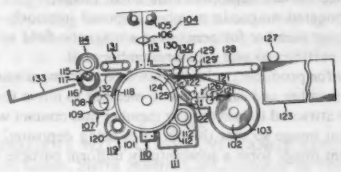
means for guiding and further mixing said exiting mixed light beams to the outlet port of said mixing system.

4,240,739

ELECTROSTATIC COPYiNG APPARATUS

Noboru Koumura, Narashino; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Nobuhiro Takekawa, Tokyo, and Motoharu Fujii, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1977, Ser. No. 794,224
Claims priority, application Japan, May 17, 1976, 51/56258
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **15 Claims**



1. An automatic printing apparatus comprising:

an image formation member for forming a master which may be repetitively subjected to a process of reproducing an original image;

means for supporting the image formation member;

a rotatable body capable of holding said image formation member on a periphery thereof;

means for withdrawing the image formation member from said supporting means and for winding said member around said rotatable body;

optical means for projecting an original image upon said image formation member on said rotatable body;

heating means for heating said image formation member on said rotatable body to form said image formation member into a master carrying a permanent developed image of the original, said heating means being movable into and out of contact with said image formation member;

recording process means for repeatedly effecting a record-

ing process including forming a latent image of the permanent image on the master, developing the latent image into a visible image and transferring the visible image onto a recording medium, said process means being located adjacent the periphery of said rotatable body;

means for bringing the recording medium into contact with the master at a transfer station for direct transfer of the visible image; and

means for removing the master from said rotatable body after termination of operation of said recording process means;

wherein the master is formed on said rotatable body and removed therefrom after recording process operations, and wherein another image formation member is then wound around the rotatable body to form another master for repeating the recording process.

4,240,740

DEVELOPMENT SYSTEM

Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1979, Ser. No. 47,615
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **22 Claims**

1. An apparatus for developing a latent image with magnetic particles, including:

an elongated tubular member having a multiplicity of magnetic fibers extending outwardly therefrom with the free end regions of at least a portion of said fibers being positioned closely adjacent to the latent image;

an elongated magnetic member disposed interiorly of said tubular member for generating a magnetic field to attract the particles to said tubular member; and

means for producing relative movement between said tubular member and said magnetic member to move the particles attracted to said tubular member into contact with the latent image so that the particles being deposited on the latent image form a substantially uniform particle image.

4,240,741

MODULAR PUNCH MARKING APPARATUS

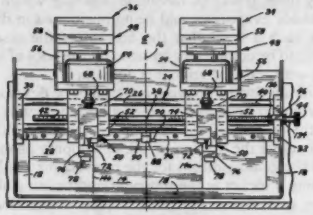
Richard D. Anderson, Maple Grove, and John A. Wedel, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 63,674
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—40 **14 Claims**

1. In a photographic printer in which indicia producing apparatus provides indicia at selected locations on a print paper strip that is transported along a paper path and is exposed to light from a photographic film original at a paper mask location, the improvement comprising:

locating means fixedly attached to the paper mask for locating the entire indicia producing apparatus in both transverse and longitudinal directions in a fixed and predetermined position with respect to the paper path;

engaging means connected to the entire indicia producing apparatus for engaging the locating means; and



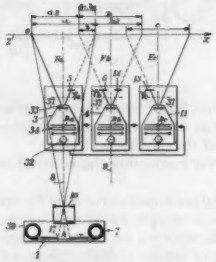
snap lock means for retaining the engaging means in an engaged relationship with the locating means in a fixed and predetermined position.

4,240,742

CONTINUOUS PHOTOSENSITIVE SUPPORT PRESENTING A SPATIAL LAP DISSOLVE, ITS APPLICATION, A PROCESS FOR OBTAINING IT AND A DEVICE FOR IMPLEMENTING THE PROCESS

Henri Fabiani, 39 Avenue du General Leclerc, 92100 Boulogne, and Alain Bret, 108 rue de Garches, 92210 Saint-Cloud, both of France

Filed Nov. 8, 1978, Ser. No. 958,729
Claims priority, application France, Sep. 11, 1977, 77 33702
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—46 **10 Claims**



1. A process for forming on a photosensitive support successive images having a dissolve therebetween and derived from at least two primary light images in overlapping, partially merging areas, comprising the following steps:

(a) forming first and second primary light images on a screen while overlapping said images in part to form an area of superimposed brilliancy between said images;

(b) reducing the brilliancy of each of said primary light images in said area by interposing shutters in the paths of merging portions of the light beams forming said successive images to create a dissolve therebetween;

(c) extinguishing said second light image;

(d) disposing a photographic apparatus loaded with said photo-sensitive support in an axis coextensive with that of said first primary light image;

(e) exposing said photosensitive support to said first primary light image to form thereon a secondary image;

(f) extinguishing said first light image and re-establishing said second light image;

(g) adjusting said photographic apparatus to an axis coextensive with that of said second primary image by relative movement therebetween;

(h) advancing said photosensitive support within the photo-

graphic apparatus over a predetermined distance corresponding substantially to said relative movement; and

(i) exposing said photosensitive support to said second primary light image to complete a secondary image with a dissolve between the successive primary images.

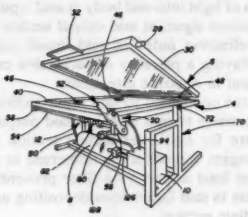
8. A system for providing an image dissolve on a continuous photosensitive support comprising a projection screen, at least two projectors for projecting, respectively, successive light images on said screen in overlapping, partially merging areas, at least two opaque shutters disposed between said projectors and said screen to reduce the brilliancy of the projected images in said overlapping areas, a photographic apparatus containing a moveable photosensitive support for receiving exposures from said light images, means within said apparatus for moving said support to positions to facilitate exposure thereof to overlapping successive images, and means for relative movement between said projectors and said photographic apparatus to permit exposure of successive images.

4,240,743

VACUUM FRAME

Joseph G. Hliboki, Old Tappan, and Paul Staudenmaier, Flanders, both of N.J., assignors to Teaneck Graphics Corp., Carlstadt, N.J.

Filed May 8, 1978, Ser. No. 904,114
Int. Cl.[2] G03B *27/60, 27/20*
U.S. Cl. 355—73 **11 Claims**



1. A vacuum frame, comprising:

a base section;

a cover hingably attached to said base section and including a transparent section, said cover and said base section forming a vacuum chamber therebetween when said vacuum frame is in a closed position;

a reserve vacuum tank in fluid communication with said vacuum chamber, said reserve vacuum tank adapted to create a vacuum within said vacuum chamber;

a vacuum pump means in fluid communication with said reserve vacuum tank, said vacuum pump means adapted to create a vacuum within said reserve vacuum tank; and

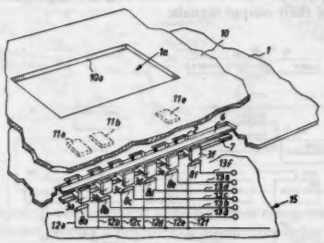
an electro-mechanical means for simultaneously regulating the vacuum pressure within said vacuum chamber and said reserve vacuum tank and the actuation of said vacuum pump means, said electro-mechanical means comprising a cam means secured to said vacuum frame for simultaneously actuating a series of valves and switches for regulating a vacuum within said vacuum chamber and said reserve vacuum tank.

4,240,744

PHOTOGRAPHIC COPYING MACHINE WITH INTERCHANGEABLE FORMAT MASKS

Heinz Rapp, Munich; Ernst Biedermann, Taufkirchen, and Dieter Wittenbrink, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,867
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659449
Int. Cl.[3] G03B *27/58, 27/62*
U.S. Cl. 355—74 **13 Claims**



1. In a photographic copying machine wherein the configuration and/or dimensions of the opening in a selected one of a series of masks with openings of different size and/or shape determine the size and/or shape of the image which is reproduced on a photosensitive material and wherein each mask is provided with indicia denoting the size and/or shape of the respective opening, the combination of locating means for a selected mask; a plurality of magnetically actuatable switching elements, said switching elements forming a plurality of groups, one for each of said series of masks; and means for magnetically actuating the corresponding group of switching elements in response to placing of a selected mask in a predetermined position with respect to said locating means, including a battery of magnetic actuators adjacent to said locating means and each associated with one of said switching elements, the indicia of the mask in said predetermined position being situated adjacent to the actuators for the corresponding group of switching elements and across the respective actuators from the corresponding switching elements and being operative to effect the actuation of the corresponding switching elements by way of the adjacent actuators on placing of the selected mask in said predetermined position.

4,240,745

IMAGERY WITH CONSTANT RANGE LINES

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,007
Int. Cl.[3] G01C *3/08;* **G01B** *11/30*
U.S. Cl. 356—5 **1 Claim**

1. Apparatus for producing a range contour map of an area consisting of spaced constant range lines with equal range differences between adjacent lines, said apparatus comprising:

a mode-locked laser producing a beam of pulsed light of highly stable pulse repetition frequency;

means for splitting said beam into first and second pulsed beams;

means for scanning said area with the first beam;

first and second photodetectors, each operating to convert an optical signal at its input into an electrical signal at its output, said first photodetector receiving said first beam at its input and said second photodetector receiving at its input the light reflected from said area as a result of said scanning;

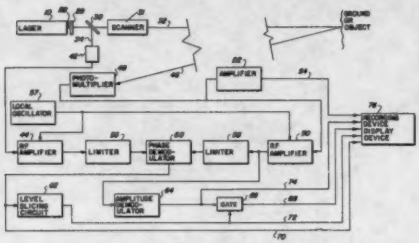
first and second radio frequency amplifiers each having a

radio frequency input and a local oscillator input and being capable of producing at its ouput a signal of frequency equal to the difference between the frequencies of signals applied to the radio frequency and local oscillator inputs, said radio frequency inputs being tuned to the same harmonic of the pulse repetition frequency of said laser;

means coupling the radio frequency inputs of said first and second radio frequency amplifiers to the outputs of said first and second photodetectors, respectively;

a common local oscillator coupled to the local oscillator inputs of said radio frequency amplifiers;

limiting means coupled to the outputs of said radio frequency amplifiers for removing the amplitude modulation of their output signals;



a phase demodulator receiving the limited signals from the outputs of said radio frequency amplifiers and producing at its output a signal of magnitude directly related to the phase difference between said limited signals;

a gate circuit having an input and an output;

means for amplitude demodulating the output signal of said second radio frequency amplifier and for applying the resulting amplitude modulation to the input of said gate circuit;

means including level sensitive means coupled between the output of said phase demodulator and said gate for inhibiting said gate whenever the phase difference between said limited signals is less than a predetermined small angle; and

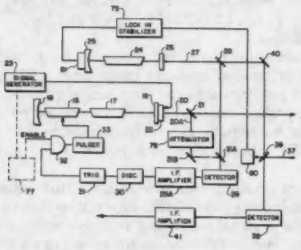
recording means coupled to the output of said gate circuit.

4,240,746

SYSTEM FOR TRANSMITTER FREQUENCY CONTROL IN COHERENT LADAR

Terence H. Courtenay, Ottawa, and James M. Cruickshank, Quebec, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defense, Ottawa, Canada

Filed Aug. 6, 1979, Ser. No. 64,294
Int. Cl.³ G01C *3/08*; H01S *3/00*
U.S. Cl. 356—5 **12 Claims**



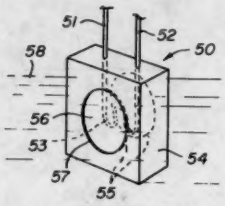
1. A laser radar system comprising a hybrid transmitter laser including a high power pulse section and a low power continuous section within a common optical cavity, a local oscillator laser, means for mixing a continuous output beam of a given frequency from the transmitter laser with the output signal frequency of the local oscillator and for providing a difference signal frequency, means for determining the instant when the transmitter frequency is offset from the local oscillator by a predetermined value, and means for causing a high powered output signal pulse to be generated by the transmitter laser at said instant and at the same frequency as said low power output.

4,240,747

REFRACTIVE-INDEX RESPONSIVE LIGHT-SIGNAL SYSTEM

Alan L. Harmer, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Continuation-in-part of Ser. No. 919,981, Jun. 28, 1978, Pat. No. 4,187,025. This application Oct. 3, 1979, Ser. No. 81,351
Int. Cl.³ G01N *21/41*
U.S. Cl. 356—133 **12 Claims**



1. A device for producing a luminous signal representing the refractive index of a liquid, comprising:

an elongated light-conducting body having an input section, an intermediate section connected to said input section and an output section connected to said intermediate section, said intermediate section being curved so that the injection of light into said body at said input section results in a luminous signal at said output section corresponding to the refractive index of said liquid, said intermediate section having a plurality of successive curvatures alternately bent in opposite directions;

a light source connected to said input section;

means responsive to said signal at said output section; and

an enclosure for said intermediate section placed at least over a region thereof to be immersed in said liquid and formed at least in part by a filter preventing particles in suspension in said liquid from depositing upon the curved intermediate section.

4,240,748

HAND-HELD OPTICAL CHARACTER RECOGNITION WAND WITH VISUAL ALIGNER

Serge L. Blanc, Los Gatos, and William R. Smith, Mountain View, both of Calif., assignors to Caere Corporation, Los Gatos, Calif.

Filed Jun. 26, 1978, Ser. No. 918,814
Int. Cl.³ G01C *15/00*
U.S. Cl. 356—138 **6 Claims**

1. An improved optical reading device comprising:

a housing;

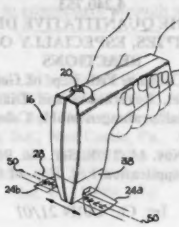
light means mounted within said housing for illuminating characters;

light detecting means mounted within said housing for detecting light;

lens means mounted within said housing for receiving light reflected from said characters which are located within an effective reading area of said device and for forming an image corresponding to said characters on said light detecting means; and

alignment means coupled to said housing for projecting a

light pattern on the surface which includes said characters, said pattern being substantially symmetrical about a vertical axis of said device which extends through the center of said effective reading area when said device is properly aligned with respect to said surface;



whereby by aligning said symmetrical pattern relative to said characters, said device is aligned for the reading of said characters.

4,240,749

TEST VESSEL

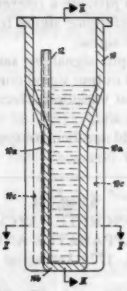
Erich Retzer, Maisach, Fed. Rep. of Germany, assignor to Compur-Electronic Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,866

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 7732771

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **7 Claims**



4. A test vessel for holding a quantity of liquid to be tested, said vessel having upright walls for confining liquid therein, said walls throughout a portion of the height of the vessel including, when viewed in horizontal cross-section, transparent front and rear walls substantially parallel to each other and arranged so that a testing ray may be projected through said front and rear walls and through the liquid between them, and side walls shaped to define a passage through which said ray may pass, said passage having a relatively narrow part at one point in the direction of travel of the ray and having a wider part at another point in the direction of travel of the ray, said wider part providing sufficient space to receive and retain a capillary tube in upstanding position and in a location where it will not be in the path of a ray of maximum width permitted by said narrow part.

4,240,750

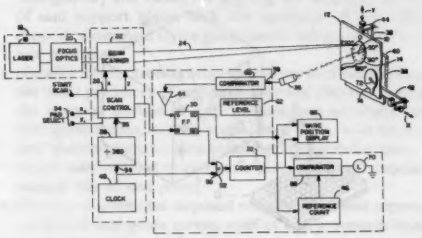
AUTOMATIC CIRCUIT BOARD TESTER

Robert L. Kurtz, 10109 Bluff Dr., and William A. Hurd, 2107 Shannonhouse Rd., both of Huntsville, Ala. 35803

Continuation of Ser. No. 752,784, Dec. 20, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,870

Int. Cl.³ G01B *11/00*

U.S. Cl. 356—394 **2 Claims**



1. An electrical circuit board testing system comprising:

a circuit board having a plurality of connective holes therethrough and electrically conductive leads of components extending along said board in discrete and varied directions to said holes;

positioning means for holding and positioning a said printed circuit board under test at a precise position, wherein a face of said board to be examined is unobscured;

a counter;

illumination means, including a laser and focusing optics, for focusing a beam of laser light onto the face of said printed circuit board held by said positioning means;

scanning means responsive to a discrete count from said counter for positioning said beam along selected paths which include paths substantially normal to and across radial lines from said holes and accordingly substantially normal to said leads on said board;

detection means spaced from said printed circuit board and spaced from and to the side of said beam for sensing the amplitude of scattered laser light from separate discrete regions of said board as said board is scanned and for providing discrete electrical outputs, each representative of the amplitude of scattered light from a discrete region of said board as it is scanned; and

reference means including an electrical memory having discrete electrical values, representative of discrete amplitude values of scattered light from a reference circuit board resulting from exposure of said reference circuit board along like said selected paths, said values being stored in said memory and located by discrete counter addresses, and said reference means including means for reading out said discrete electrical values responsive to said counter;

whereby selected paths, or a selected series of paths, of scanning may be effected in any direction and at any location on said board, and the existence and location of a conductor on the surface of said board detected and compared with the existence or location of a conductor on said reference board which lies substantially normal to a said path.

4,240,751

METHOD AND APPARATUS FOR SPECIFIC BINDING SUBSTANCES

Carl B. Linnecke, Los Angeles, and Daniel Wong, Orange, both of Calif., assignors to Akzona Incorporated, Asheville, N.C.

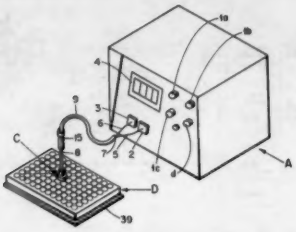
Filed Nov. 9, 1978, Ser. No. 959,386

Int. Cl.³ G01N *21/27*

U.S. Cl. 356—409 **35 Claims**

1. In combination, (1) a fiber optic colorimeter comprising a

light source, a means for detecting and measuring light, and a probe containing a plurality of optic fibers including a first light conducting means for conducting light from the light source of the colorimeter to a test sample and a second light conducting means for conducting light from the test sample to the means for detecting and measuring light of the colorimeter, and (2) a microplate having one or more wells, each of which is adapted to contain a liquid test sample for use in a predetermined colorimetric medical diagnostic test and each transparent to the light from said first light conducting means, wherein a reflective surface is disposed below the bottom of the wells of said microplate and said wells are adapted to accommodate the probe of said fiber optic colorimeter, and wherein said probe includes an attachment means fittably engaging said probe and joinable in a close-fitting engagement with an upper portion of each well in said microplate to position the probe above the well without engaging said liquid sample.



4,240,752

PROCESS AND APPARATUS FOR RECOGNIZING CLOUD DISTURBANCES IN A SAMPLE SOLUTION WHICH IS BEING SUBJECTED TO ABSORPTION PHOTOMETRY

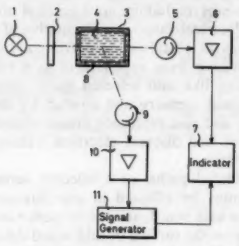
Walter Tausch, and Hans Gausmann, both of Aalen, Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,150

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757197

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—436 **4 Claims**



1. In apparatus for making absorption-photometric measurements upon a series of liquid samples wherein light from a source is transmitted on a first and direct path alignment through the same, there being concentration-measurement means including a photoelectric receiver positioned for response to light passing through the sample on said alignment, and means directly connected to the output of said photoelectric receiver for providing a direct indication of the concentration of a sought element in each of a succession of the samples, the improvement wherein a further photoelectric receiver and associated optical-focusing means are positioned laterally of said path alignment and are optically aligned to intersect said direct path alignment within the sample, and means independent of said concentration-measurement means and responsive to a signal output of said further photoelectric receiver for indicating for the case of each absorption measurement whether a cloud disturbance is present in the sample.

4,240,753

METHOD FOR THE QUANTITATIVE DETERMINATION OF TURBIDITIES, ESPECIALLY OF IMMUNE REACTIONS

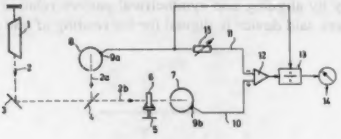
Gernot K. Brück, Cologne, Fed. Rep. of Germany, assignor to Hermann Lommel, Leverkusan and Diamant Test Gesselschaft fur Edelsteinprufungen mbH, Cologne, both of, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,711

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 27513651

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—442 **34 Claims**



1. A method for quantitative determination of very minute degrees of turbidities in a dilute test specimen comprising the steps of:

a. irradiating a test specimen with a monochromatic laser beam along a first path;

b. detecting and measuring the intensity of the laser beam emerging from the test specimen to provide a first measurement signal;

c. diverting a defined portion of the laser beam from said first path to a lateral path prior to interception of said beam by the test specimen;

d. detecting the intensity of said diverted laser beam along the lateral path to provide a reference signal;

e. subtracting said reference signal from said first signal to provide an output signal;

f. dividing said output signal by said reference signal to provide a quotient output signal corresponding to the true differential without variation effects originating with the laser light source; and,

g. responding to said quotient output signal to provide a value for turbidity.

4,240,754

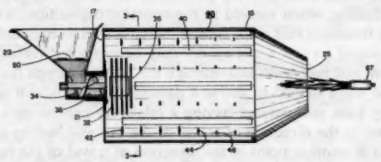
ASPHALTIC CONCRETE PATCH MIXING AND HEATING APPARATUS AND METHOD

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 871,351, Jan. 23, 1978. This application May 17, 1978, Ser. No. 906,734

Int. Cl.³ B28C *5/06, 5/42*

U.S. Cl. 366—4 **17 Claims**



1. A process for heating and mixing particles of a composition comprising asphalt and aggregate in a rotatable drum comprising

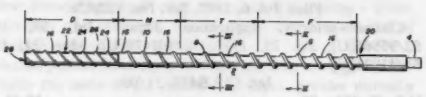
placing the composition particles into the drum, introducing hot gases of combustion into said drum through a port, open to atmosphere, simultaneously rotating said drum at a speed to prevent formation of a veil or curtain of the particulate composition through said hot gases of combustion, and concurrently venting exhaust gases from said drum directly to atmosphere through said port.

4,240,755

INJECTION MOLDING SCREW FOR PROCESSING HEAT SENSITIVE POLYMERIC MATERIALS

James D. Frankland, Jr., New Castle, Pa., assignor to New Castle Industries, Inc., New Castle, Pa.

Continuation of Ser. No. 797,828, May 17, 1977, abandoned.
This application Jul. 13, 1978, Ser. No. 924,480
Int. Cl.³ B29B 1/06
U.S. Cl. 366—88 **5 Claims**



1. In an injection molding screw for plasticating heat sensitive polymeric materials for use in forming beverage containers while avoiding the release of objectionable constituents of said polymeric materials through thermal decomposition, said screw including an inlet end, a discharge end, means for mounting a backflow valve on said discharge end and a flighted section for applying high shear and high compression to said polymeric material, the improvement comprising:

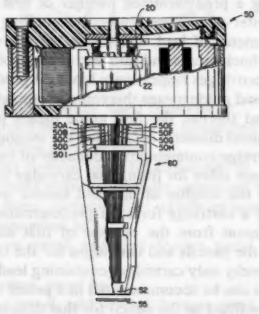
a flighted screw section disposed between said high shear and high compression section and said discharge end of said screw, said screw section having an available volume per unit length for receiving said polymeric material that is greater than the corresponding available volume per unit length of said high shear and high compression section and having means for pumping said polymeric material to said discharge end of said screw at a rate at least equal to the pumping rate of said zone of high shear and high compression.

4,240,756

OPTIMIZED WIRE MATRIX IMPACT PRINT HEAD

Joseph P. Ku, 1083 Grebe St., Foster City, Calif. 94404, and Richard D. Trezise, 1204 Thornmill Way, San Jose, Calif. 95121

Filed Jul. 26, 1978, Ser. No. 928,200
Int. Cl.² B41J 3/12
U.S. Cl. 400—124 **17 Claims**



1. A wire matrix impact print head commprising:

a mounting base plate;

a cap plate having a central aperture;

stylus guide means, including a first guide means having at least a first and a second support plate, with each support plate having a plurality of apertures distributed about its outer periphery, with the vertical axis of each one of said plurality of apertures in each of said plates being parallel to the axis of each of the other apertures in said plate, means for connecting said support plates one to the other contiguously and means for aligning the apertures of each of said support plates with the apertures of said other support plates, said stylus guide means being connected to said base plate;

a plurality of electromagnetic structures distributed about the outer periphery of said base plate and disposed around the topmost portion of said guide means including said first guide means, relative to said base plate, with each of said electromagnetic structures having an outer pole, a center pole coupled to said outer pole, and a coil disposed around one of said poles;

a plurality of armatures disposed radially about said topmost portion of said guide means, each of said armatures being associated with one of said electromagnetic structures to form an electromechanical actuator for transferring electromechanical energy to a stylus, and each of said armatures having a stylus engaging end and an outer end; and,

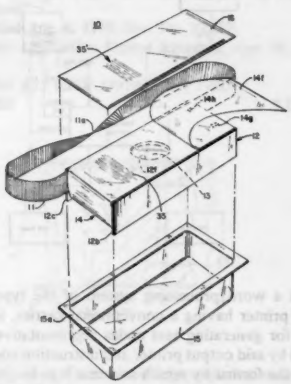
a plurality of styli carried by said guide means, each of said styli being of an elongated rod-like configuration having a free head end for engagement by the stylus engaging end of one of said armatures and a printing end for impacting a recording medium when the stylus is propelled through and said guide means by one of said actuators.

4,240,757

FANFOLD REPLACEMENT RIBBON PACKAGE

Samuel Y. Hanna, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 26, 1978, Ser. No. 972,800
Int. Cl.³ B41J 33/10
U.S. Cl. 400—196.1 **19 Claims**



1. A replacement ribbon package for use in printers having a ribbon cartridge housing and an associated printing element, said replacement ribbon package comprising:

a first package member having a flat substantially rigid central portion and at least a pair of sidewalls extending downwardly from opposing sides of said substantially rigid central portion;

a second package member comprising a tearaway strip at least partially encircling said substantially rigid central portion while exposing said sidewalls, whereby said substantially rigid central portion, said sidewalls and said

tearaway strip cooperatively form a ribbon encircling enclosure;

an elongated closed loop inked ribbon, positioned within and maintained by said ribbon encircling enclosure formed by said first and second package members in a loosely arranged fashion to aid in preventing said ribbon from being creased, a small portion of said ribbon extending outside of said ribbon encircling enclosure to facilitate placement of the ribbon about said printing element;

said tearaway strip including releasable means for releasably securing said tearaway strip about said ribbon and said first package member to facilitate sliding of said tearaway strip out from beneath the ribbon after insertion of the replacement ribbon package into a ribbon cartridge housing and releasing of said releasable means;

a substantially flat stripper plate positioned between said ribbon and said substantially rigid central portion to facilitate separation of said ribbon from said first package member after removal of said tearaway strip; and

said substantially rigid central portion having an opening to expose a central portion of said stripper plate whereby said first package member may be lifted away from said ribbon and out of the cartridge housing while said ribbon is held down by said stripper plate.

4,240,758

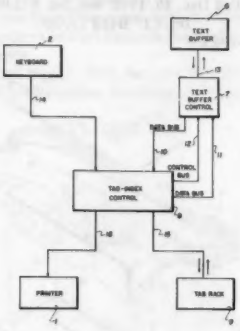
METHOD AND APPARATUS FOR ESTABLISHING TAB SETTINGS AND INDEXING PARAMETERS, AND PRINTOUTS REPRESENTING SAME, FOR A WORD PROCESSING SYSTEM

Robert G. Acosta, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 884,055

Int. Cl.³ B41J *5/30*

U.S. Cl. 400—279 **7 Claims**



1. In a word processing system of the type including an output printer having a conventional carrier, input keyboard means for generating text codes representative of text to be printed by said output printer and instruction codes representative of the format by which said text is to be printed, memory means for storing said text codes and said instruction codes, and an electronic tab rack for storing tab codes representing tab stops for the carrier of said printer, the improvement comprising:

(a) first means responsive to said input keyboard means for generating a string of instruction codes respectively representing the beginning of the instruction code string, the indexing parameter of said format, the location of tab stops for said printer, and the termination of said instruction code string,

(b) second means for introducing said instruction code string into said memory means,

(c) third means responsive to said input keyboard means for establishing a grid of tab settings within said tab rack,

(d) fourth means for controlling the printing by said printer of a line of code characters respectively corresponding only to each of said instruction codes of said code string, and

(e) fifth means for moving the printer carrier to the respective positions of said tab settings so that the printing of each instruction code character representing the corresponding tab stop location code occurs at a position along said line of code characters corresponding to the tab setting position.

4,240,759

MECHANICAL PENCIL HAVING GUIDES TO MATCH GUIDES ON A REFILL CARTRIDGE

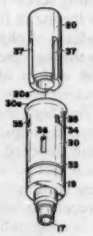
Kenji Matsumoto, Tokyo, and Gouji Sakaoka, Kawasaki, both of Japan, assignors to Pentel Kabushiki Kaisha, Nihonbashi, Japan

Filed Jul. 6, 1978, Ser. No. 922,428

Claims priority, application Japan, Jul. 19, 1977, 52/95966[U]; Jul. 29, 1977, 52/101478[U]; Mar. 31, 1978, 53/41921[U]

Int. Cl.³ B43K *21/00*

U.S. Cl. 401—85 **13 Claims**



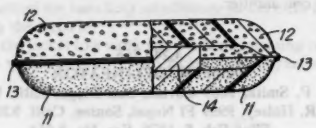
1. A plurality of mechanical pencils each being for a different size lead and a plurality of equal size lead cartridges respectively containing different size leads, each pencil comprising an outer casing, an inner casing having a lead gripping chuck means at the forward end thereof, a spare lead cartridge receiving housing, a lead passage between said chuck means and said spare lead cartridge receiving housing, said lead gripping chuck means and said lead passage being capable of receiving only lead of a predetermined diameter, and a spring means for pressing said inner casing rearwardly along the axis thereof, said spare lead cartridge receiving housing having therein a cylindrical body, the cylindrical bodies in the respective pencils having a predetermined number of first guide means at constant intervals therearound corresponding to the predetermined diameter of lead which can be received in said lead gripping chuck means and said lead passage of that pencil, and said lead cartridges respectively having a predetermined number of second guide means thereon corresponding to the diameter of lead therein, the first guide means in a pencil for a predetermined diameter of lead and the second guide means on a lead cartridge containing that diameter of lead being engagable with each other for fitting that cartridge to that cylindrical body, and the number of first and second guide means on a pencil and a cartridge for each predetermined diameter lead being different from the number of first and second guide means on the pencils and cartridges for the other diameter of leads, whereby only cartridges containing leads having a diameter which can be accommodated in a pencil for that diameter lead can be fitted to the pencil for that diameter lead, thereby preventing misattachment of a lead cartridge having the wrong diameter leads for a pencil to the cylindrical body of that pencil.

4,240,760

FOAM SCRUBBING DEVICE INCORPORATING A CLEANSER

Stella R. Levine, Chappaqua, N.Y., assignor to Brewster Laboratories, Inc., New York, N.Y.

Filed Jul. 21, 1978, Ser. No. 927,251
Int. Cl.³ A47K 7/02
U.S. Cl. 401—201 6 Claims



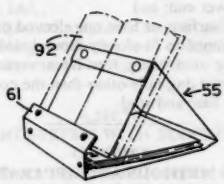
1. A foam scrubbing device comprising:
a glycerine soap bar;
a first dense foam layer of a foam material having a given porosity and thickness for allowing a given amount of wetted soap to pass therethrough;
a second porous foam layer of foam material having substantially the same shape as said first layer, greater porosity and being thinner than said first dense layer for allowing about the same amount of wetted soap to pass therethrough as passes through said first dense layer;
said glycerine soap bar disposed between said first and second layers, said first and second foam layers heat sealed about the peripheral edges thereof for encapsulating said soap bar, whereby the different porosities of the two layers provide different abrasive characteristics for cleansing and scrubbing.

4,240,761

LOOSELEAF BINDER-DISPLAY STAND

Samuel O. Jacobson, 11255 Gaviota Ave., Granada Hills, Calif. 91344

Filed Jun. 28, 1979, Ser. No. 52,870
Int. Cl.³ B42F 13/40
U.S. Cl. 402—76 12 Claims



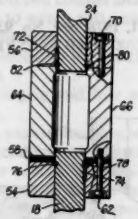
1. A looseleaf binder-display stand comprising:
(a) a separator-bookrest panel hingedly connected to
(b) a cradle-pagestop panel having
(1) a first panel element hingedly connected to
(2) a second panel element hingedly connected to
(3) a third panel element, said cradle-pagestop panel hingedly connected to
(c) a first dorsum panel, said first dorsum panel hingedly connected to
(d) a second dorsum panel by
(e) a back cover panel, said second dorsum panel hingedly connected to
(f) an end panel by
(g) a front cover panel.

4,240,762

SEAL-ALIGNING RIGID COUPLING ASSEMBLY

Valenteen S. Lobanoff, Seneca Falls, N.Y., assignor to Johnston Pump Company, Glendora, Calif.

Filed Mar. 12, 1979, Ser. No. 19,482
Int. Cl.³ F16D 1/00
U.S. Cl. 403—24 10 Claims



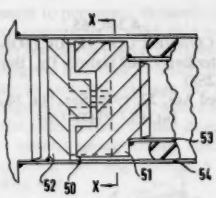
2. An apparatus for rigidly coupling two, spaced coaxial shafts, the apparatus comprising:
a. a first cylindrical hub of uniform, substantially circular cross section, and having a concentrically located aperture along the hub axis for installing said first hub on one of said shafts at about the end thereof,
b. a second cylindrical hub of uniform, substantially circular cross section, and having a concentrically located aperture along the hub axis for installing said second hub on the other of said shafts at about the end thereof,
c. said first and second hubs having equal diameters,
d. means for radially and axially securing said hubs to the respective shafts, and
e. means for mechanically securing said hubs to each other in spaced parallel relation.

4,240,763

RESILIENT COUPLINGS

Alan F. Moore, Burbage, England, assignor to Dunlop Limited, London, England

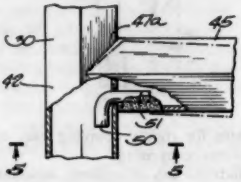
Filed Apr. 4, 1979, Ser. No. 27,101
Claims priority, application United Kingdom, Apr. 15, 1978, 14886/78
Int. Cl.³ E21B 19/16; F16D 1/00
U.S. Cl. 403—203 9 Claims



1. A resilient coupling for transmitting torque between drive and driven shafts comprises an inner shaft nested concentrically within an outer shaft, a resilient sleeve unit of elastomeric material positioned between the shafts for resilient transmission of torque loads between the shafts up to a predetermined value and a resilient buffer unit mounted within the outer shaft for resilient transmission of torque loads between the shafts in excess of the predetermined value, the buffer unit comprising male and female spider units, each spider unit having a plurality of axially extending arms radially spaced from the normal axis of rotation of the coupling with the arms of one spider unit being intercalated with the arms of the other spider unit, respective web portions interconnecting the arms of each spider

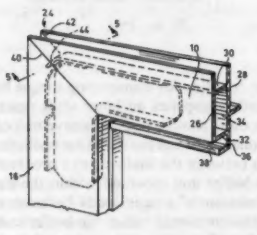
unit over at least part of the axial length thereof and a respective resilient element of elastomeric material provided between successive arms of the spider units for resilient transmission of torque loads in excess of the predetermined value.

4,240,764
DISPLAY STRUCTURE
Dieter F. Wegner, 11628 N. Shorecliff La., 2 West, Mequon, Wis. 53092
Filed Aug. 31, 1978, Ser. No. 938,609
Int. Cl.[3] B25G *3/00*; F16B *9/02*; F16L *41/00*
U.S. Cl. 403—252 **10 Claims**



1. In a display structure having a vertical post and a horizontal rail having an open end, the improvement for releasably interconnecting the post and rail and comprising said post having a salient side wall, said rail having a mating notched end, a socket opening in the salient side wall of the post and a fixed peg projecting from the rail into said notch and said peg having a shank portion supported in the open end of said rail and offset from the center thereof, and a hook portion releasably engaged through said socket opening, said socket opening being slightly oblong in the longitudinal direction of said post to accommodate swinging movement of the hook, with the juncture of said hook portion and shank portion being located within the confines of said notch and said juncture being spaced from the apex of the notch a distance only slightly greater than the wall thickness of the vertical post and positioned close to one side of said rail to enable swinging the rail into an angularly related relationship with respect to the post to support the rail from the post with the notched end of the rail interlockingly embracing the salient side wall of the post to prevent twisting of the rail with respect to the post about said fixed peg but for the interlocking of said notched end with the salient side wall of the post.

4,240,765
CORNER CONSTRUCTION
Hermann F. Offterdinger, 602 Galway Dr., Burlington, Ontario, Canada (L7L 2S8)
Filed Apr. 27, 1979, Ser. No. 34,458
Int. Cl.[2] F16D *7/04*
U.S. Cl. 403—402 **4 Claims**



1. A corner construction comprising two frame elements of substantially similar cross section having matching mitered ends brought together at a joint plane, the cross section of said frame elements comprising a portion of H-shape having two spaced parallel side walls, the cross piece of the portion of H-shape which cross piece extends between the said two parallel side walls constituting a web, a portion of the web of one element adjacent to the mitered end of that element being sheared from its respective side wall portion and pressed from the plane containing the remainder of the web to extend across the joint plane and between the side wall portion of the other element with its sheared edges engaging the said side wall portions to align the two frame elements accurately with respect to one another.

4,240,766
TRAFFIC DELINEATOR
William P. Smith, 9009 Covina, San Diego, Calif. 92126, and Dave R. Halsey, 9959 El Nopal, Santee, Calif. 92071
Filed Feb. 5, 1979, Ser. No. 9,664
Int. Cl.[3] E01F *9/00*
U.S. Cl. 404—10 **7 Claims**

1. A readily removable device for delineating traffic lanes or the like which comprises:
an elongated tubular post made of lightweight pliable material having a cylindrical, threaded lower end;
a substantially conical base having at its apex a shallow well threaded and dimensioned to hold the lower end of the said post secured therein;
extending downward from the bottom center of said base and integrally therewith, a solid anchoring stud having a rounded lower end; and
in the ground surface, at least one sleeved dug hole shaped and dimensioned to fit closely around said stud;
said anchoring stud being free from vertical restraint in relation to said dug hole other than the combined weight of said post base and stud.

4,240,767
VALVING METHODS AND APPARATUS FOR FLOODING AND GROUTING OFFSHORE JACKET SLEEVES
Bert E. Gracia, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed Mar. 7, 1979, Ser. No. 18,401
Int. Cl.[3] E02B *17/02*; E02D *21/00, 27/52*
U.S. Cl. 405—227 **24 Claims**

1. A flooding and grouting valve mechanism for use in an offshore jacket of the type which is to be floated to an offshore work site, submerged onto a seabed by flooding of at least some sleeves of the jacket, and then anchored to the seabed by piles driven through the sleeves and grouted thereto, said flooding and grouting valve mechanism being attached to a sleeve and including:
means defining a flood opening for admitting ambient sea water,
means defining a grout opening for admitting grout,

means defining a grout conduit coupled to said grout opening,

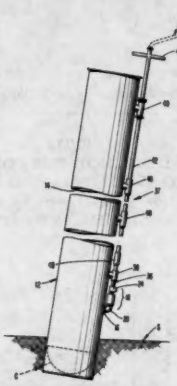
an outlet communicating with an inlet of the sleeve, which inlet communicates with a compartment within the sleeve to conduct thereto sea water or grout, and

valve means for uncovering said flood and grout openings to selectively admit sea water or grout for delivery to said compartment,

said grout conduit means including a portion forming said valve means for uncovering said flood openings.

24. A method for installing an offshore jacket onto a seabed comprising the steps of:

floating the jacket to a work site while maintaining compartments within sleeves of said jacket in a bouyant state,



using valve actuating, conduit-defining rod means to actuate a valve mechanism on one of said sleeves of said jacket to communicate a flood opening on said valve mechanism with a flood/grout inlet of a said sleeve to admit ambient sea water through said flood/grout inlet to flood a said compartment, causing said jacket to tend to be lowered onto the seabed,

actuating said valve mechanism to block communication between said flood opening and said flood/grout inlet,

driving anchor piles through said sleeves,

supplying grout through said conduit defining rod means to a normally closed grout opening carried by said valve mechanism and,

pumping said grout through said conduit defining rod means whereby said grout forces open said grout opening and travels through said flood/grout inlet.

4,240,768

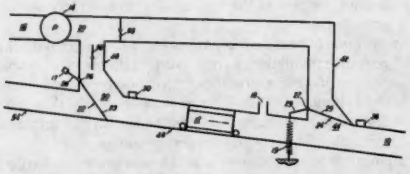
TRANSPORT SYSTEM WITH BLOCKING VALVE CONTROL

Marion R. Carstens, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Continuation of Ser. No. 628,104, Nov. 3, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,648

Int. Cl.³ B65G *51/10*

U.S. Cl. 406—19 **9 Claims**



1. In a transport system including a continuous conduit for conveying wheeled vehicles therein, at least one wheeled vehicle within said conduit, and pump means for discharging pressurized air into said conduit, the combination of:

a first overhead-suspended swingable valve adapted to move between a closed position blocking off said conduit and an open position permitting a vehicle to sweep past,

a second overhead-suspended swingable valve downstream of the first valve adapted to move between a closed position blocking off said conduit and an open position permitting a vehicle to sweep past, said first and second valves being spaced from each other,

vent means connected to the conduit between said first and second valves,

opening means urging said first and second valves to the open position,

air flow control means associated with said pump means and positioned for alternately directing air into the upper portion of the conduit and against the back of the first valve to close said first valve behind a vehicle while allowing said second valve to open under the action of said opening means ahead of said vehicle and directing air into the upper portion of the conduit and against the back of the second valve to close said second valve behind said vehicle while allowing said first valve to open under the action of said opening means, and

means responsive to the position of said vehicle for actuating said air flow control means.

4,240,769

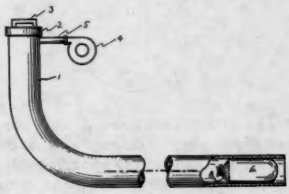
SOLID WASTE DISPOSING SYSTEM

Octavio Diaz, Margarita SG-11, Valle Hermoso, Hormigueros, P.R. 00660

Filed Jul. 12, 1979, Ser. No. 56,830

Int. Cl.³ B65G *51/00, 53/40*

U.S. Cl. 406—108 **1 Claim**



1. An improvement to pneumatic domestic type solid waste conveying systems comprising a rigid duct with a receiving end in which a flexible bag is placed to receive solid wastes, where said receiving end is capable of being closed and receiving compressed air to push said garbage bag along said duct toward the discharge end of said duct, where a positive seal of said bag against the inner surface of said duct is provided by means of an inner annular spring located inside said bag, and compressed air entering said bag through a permeable bag portion at its trailing end.

4,240,770

BORING TOOL WITH A FLOATING KNIFE

Garrj Berstein, Erkelenz, Fed. Rep. of Germany, assignor to W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

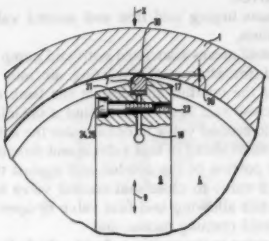
Filed Aug. 14, 1978, Ser. No. 933,138

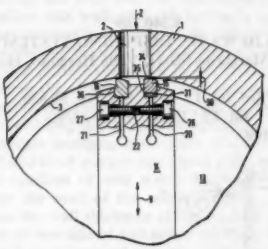
Int. Cl.³ B23B *43/00*

U.S. Cl. 408—83 **4 Claims**

1. A boring tool with knife means for machining inner cylinder surfaces of a workpiece defining an axial direction and a radial direction, said knife means being floatable in said radial direction, said radially floatable knife means comprising cutter means and support means arranged on opposite ends of the floatable knife means, each support means being arranged

behind the respective cutter means as viewed in the axial feed advance direction of the boring tool, each support means further being recessed in the radial, floating direction of the boring tool by an extent corresponding to the allowable yielding of the cutter means, whereby said allowable yielding is limited by said support means for permitting said cutter means to pass a hole in said workpiece cylinder surface, and wherein said floatable knife means comprise separate recess means for said cutter means and for said support means, and means clamping said cutter means and said support means in the respective recess means.





2. A boring tool with knife means for machining inner cylinder surfaces of a workpiece defining an axial direction and a radial direction, said knife means being floatable in said radial direction, said radially floating knife means comprising cutter means and support means arranged on opposite ends of the floating knife means, each of said support means being arranged behind the respective cutter means as viewed in the circumferential cutting direction of the boring tool, each support means further being recessed in the radial, floating direction of the boring tool by an extent corresponding to the allowable yielding of the cutter means, whereby said allowable yielding is limited by said support means.

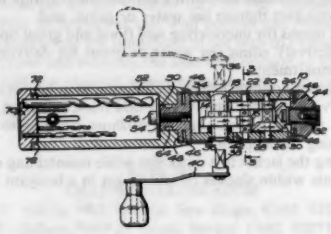
4,240,771

BREAST DRILLS

George C. Derbyshire, Sheffield, England, assignor to The Jabobs Manufacturing Company, Ltd., Sheffield, England

Filed Nov. 28, 1978, Ser. No. 964,384
Int. Cl.³ B23B *39/10, 39/00*
U.S. Cl. 408—124 **4 Claims**

1. In a breast drill, a casing of elongate hollow form containing gearing for transmitting drive to a drill chuck, a crank handle which can be turned to transmit drive to the drill chuck, a pistol grip handle connected to the casing and being capable of angular adjustment around said casing so that it can be located at a required position in relation to the position of the crank handle, and a sleeve-like extension rotatably mounted on



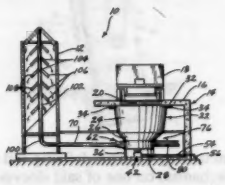
the end of the casing remote from the drill chuck and the pistol grip handle is formed integrally with said extension.

4,240,772

APPARATUS AND METHOD FOR CONVEYING GRAIN

John E. Wyatt, P.O. Box 37, Afton, Iowa 50830

Filed Nov. 14, 1977, Ser. No. 851,363
Int. Cl.³ B65G *65/00, 1/00*
U.S. Cl. 414—299 **3 Claims**



1. An apparatus for conveying grain comprising,
a housing including a bottom wall and an upright generally cylindrical side wall, said housing having an open topped chamber extended generally diametrically thereacross,
said side will including a discharge opening in communication with one end of said chamber,
a plurality of grain delivery tubes with one end portion thereof arranged in a horizontal disposition and in communication with said side wall, said end portion being generally radially directed and circumferentially spaced apart relative to said side wall,
means for supporting said housing for rotation about the upright central axis thereof whereby said chamber is rotatable to selected angular positions for registration of said discharge opening with respective ones of said tube end portions,
means for supplying grain to said chamber,
a ram movable longitudinally through said chamber for moving grain in the chamber outwardly through said discharge opening and into the end portion of a grain delivery tube registered therewith,
means for preventing the entrance of grain into the chamber behind the ram as the ram moves through the chamber,
a grain bin,
at least one of said delivery tubes including a grain discharge portion extended upwardly within said bin, said discharge portion having a plurality of vertically spaced openings therealong such that grain moved upwardly through said discharge portion by said ram is discharged into the bin through said vertically spaced openings, and
a plurality of spouts connected to said grain discharge portion in communication with respective vertically spaced openings and extended downwardly and radially out-

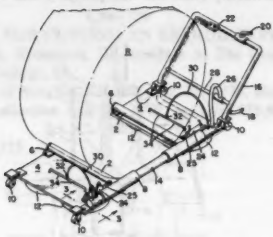
wardly therefrom, thereby to prevent backflow of grain from said bin into said grain discharge portion.

4,240,773

ROLL HANDLING APPARATUS

Melvin D. Terry, P.O. Box 7174, Seattle, Wash. 98133

Filed Sep. 5, 1978, Ser. No. 939,806
Int. Cl.³ B65G 7/06
U.S. Cl. 414—664 6 Claims



1. A device supported by air bearings, for transporting rolls of paper or the like, said device comprising:

a pair of opposing platform means designed to support a roll without damage thereto, movable relative to each other and having secured to each of their bottom surfaces at least one air bearing,

rigid means at one end of the platform means interconnecting and defining the relative movement of the platform means which are slidably mounted thereon,

means supplying air under pressure to the bearings, and

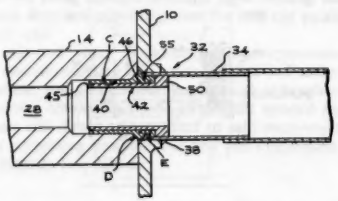
control means whereby the device may be placed adjacent the roll to be transported with the platform means extending in the direction of the axis of the roll along either side thereof and beneath the roll at a distance from each other which is less than the outer diameter of the roll whereby the roll will be lifted upon inflation of the bearings and thus transported to the desired location.

4,240,774

HERMETICALLY SEALED COMPRESSOR SUCTION TUBE AND METHOD OF ASSEMBLY

William T. Ladusaw, Jeffersontown, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 15, 1979, Ser. No. 12,280
Int. Cl.³ F04C 29/00; F16L 13/14; B21D 39/04
U.S. Cl. 418—248 8 Claims



1. A hermetic compressor unit comprising:

a casing including a side wall;

a compressor including a cylinder block positioned in said casing and having an outer surface adjacent the inner surface of said casing wall;

a suction passage in said block opening into said outer surface;

said casing having an opening aligned with and larger than said passage;

a suction tube having an inner diameter larger than said passage including one end portion positioned in said casing opening;

a tubular sleeve member being of greater ductility than said cylinder block includes a first portion arranged in said passage and an enlarged axially compressible portion arranged in said one end portion of said suction tube;

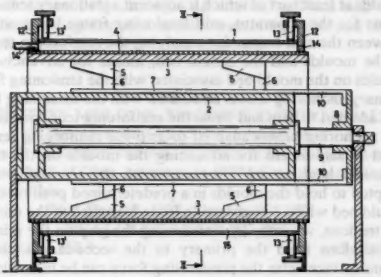
a tubular fitting having an end portion extending into said first portion of said tubular sleeve member with a larger diameter than the inside diameter of the first portion of the tubular sleeve and a shoulder portion extending radially outwardly to a position adjacent the inner wall of said suction tube to provide a circumferentially disposed area extending axially between said shoulder and said suction passage opening, said shoulder being in axial alignment with said compressible portion whereby axial movement of said fitting simultaneously radially compresses said first portion of said tubular sleeve in said passage to form a first seal area, and axially compresses said compressible portion in said circumferentially disposed area to form a second sealing area between said shoulder and said suction passage opening, and a third sealing area between said suction tube and said tubular fitting to seal the casing and suction tube connector to the compressor cylinder block.

4,240,775

IMPLEMENTATION FOR APPLYING A LINING TO THE INNER WALL OF A TUBULAR ARTICLE

Alberto Berni, Via Stoppani 15, Bergamo, Italy

Filed May 23, 1978, Ser. No. 908,652
Claims priority, application Italy, Jun. 2, 1977, 24315 A/77; Aug. 5, 1977, 26558 A/77
Int. Cl.³ B29C 1/12, 27/16; B28B 21/20, 21/80
U.S. Cl. 425—110 10 Claims



1. A self-centering machine for applying a lining to the inner wall of a tubular article characterized in that it comprises, in combination: a uniformly variable diameter tubular implementation, a fixed bedplate having a leveladjustable roller set, a cradle mounted oscillably on said bedplate and carrying, in correspondence with the axis of oscillation, a centering head adapted to receive either end of said uniformly variable diameter tubular implementation, and having along said cradle a plurality of self-centering bearings for the tube to be lined, adjusting means acting between the swingable cradle and the implementation and adapted to have the longitudinal central axis of the implementation coinciding with the axis of the self-centering bearings, actuating means being provided for adjusting the level of the roller set, to control the oscillation of the cradle and the action of the self-centering bearings, so that one end of the variable diameter implementation is introducable in the centering head of the swingable cradle when the selfcentering bearings are open and by having the implementation slidable on the roller set placed at a certain level, the tube to be lined of one length being insertable over the implementation by sliding such tube on the roller set now arranged at a

lower level than before centered on the respective self-centering bearings which are closable thereon and latched between the centering head on the one side and on a sealing ring on the other side, said implementation comprising in combination an expansible sheath or jacket of a longer length than said tube in the interior of which are provided expanding means, the cradle being tiltable upwards to permit the introduction of the coating material in the gap formed between the implementation and the tube.

4,240,776

PROCESS AND APPARATUS FOR CONTINUOUSLY PRESTRESSING CONCRETE PRODUCTS

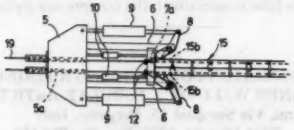
Alister Black, Blenheim, New Zealand, assignor to Universal Development Company Ltd., Belnheim, New Zealand

Division of Ser. No. 843,622, Oct. 19, 1977, Pat. No. 4,186,169. This application Apr. 5, 1979, Ser. No. 27,431

Claims priority, application New Zealand, Oct. 19, 1977, 182391

Int. Cl.³ B28B *23/04*

U.S. Cl. 425—111 **6 Claims**



1. Apparatus for producing prestressed concrete products in separable moulds in a series in a production line comprising means for supplying continuous reinforcing tendons to the moulds, an elongate mould bed adapted to support a series of moulds at least part of which is adjacent a stationary tensioning frame for the apparatus, said tensioning frame being situated between the said means for supplying the reinforcing tendons to the moulds and the mould bed, means for advancing the moulds on the mould bed associated with the tensioning frame, primary anchoring means associated with the tensioning frame and adapted to grip and stress the reinforcing tendons, secondary anchoring means adapted to grip the reinforcing tendons fixed to said means for advancing the moulds on the mould bed, and latch means associated with the tensioning frame adapted to hold the moulds in a predetermined position on the mould bed whilst a prestressing force is applied to the reinforcing tendons, whereby by transferring the grip on the reinforcing tendons from the primary to the secondary anchoring means or vice versa the prestressing force can be maintained in the reinforcing tendons whilst the said means for advancing the mould on the mould bed operates to make way for a fresh mould on the mould bed.

4,240,777

FEEDING AND MIXING NOZZLE AND METHOD FOR MIXING LIQUID RESIN MIXTURES AND FEEDING IT INTO MOLDS BY CENTRIFUGAL FORCE

Stig L. Hallerback, Vastra Frolunda, and Leif Lachonius, Surte, both of Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Division of Ser. No. 798,647, May 19, 1977, Pat. No. 4,162,039. This application Feb. 21, 1979, Ser. No. 13,081

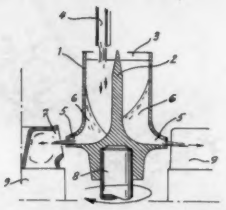
Claims priority, application Sweden, Jul. 5, 1976, 7607647

Int. Cl.³ B29C *5/04*

U.S. Cl. 425—130 **11 Claims**

1. A method for dosing, feeding and mixing at least two substances consisting of the steps of rotating a vessel having a plurality of equiangularly spaced partition walls providing a plurality of chambers therein about its central axis at a predetermined uniform angular rate of rotation, the vessel being open at its upper end defining an inlet opening and having a plurality of outlet openings communicating with its chamber, discharging materials to be mixed at a predetermined uniform constant feed rate into the vessel from a location disposed eccentrically to the rotational axis thereof and disposing a plurality of molds to be filled adjacent the discharge openings whereby upon rotation of the vessel and molds, substantially equal quantities of the mixing material are dispensed to each of the molds.

4. A nozzle for dosing, feeding and if necessary mixing substances, comprising a rotatable vessel of cup-like form having a base, a central hub portion and an outer wall spaced radially outwardly from the hub portion, said wall defining a



pouring opening in its upper portion and a plurality of outlet openings disposed at its lower portion, means for rotating said vessel about a central vertically disposed axis through the hub portion at a predetermined uniform angular rate, a plurality of equiangularly spaced partition walls extending between said hub portion and outer wall dividing said nozzle into a plurality of chambers, feed means located eccentrically to the axis of said hub portion for discharging materials at a predetermined uniform rate to said chambers, an outlet opening in each of said chambers, and a receiving mold at each outlet rotatable with said nozzle to receive the molding material by centrifugal force.

4,240,778

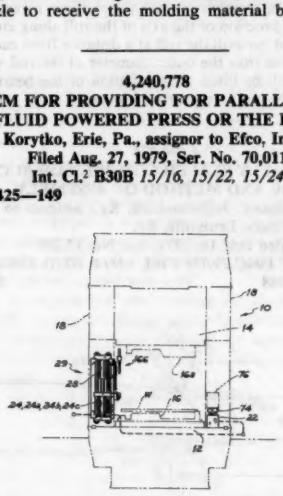
SYSTEM FOR PROVIDING FOR PARALLELISM IN FLUID POWERED PRESS OR THE LIKE

Myron I. Korytko, Erie, Pa., assignor to Efco, Inc., Erie, Pa.

Filed Aug. 27, 1979, Ser. No. 70,011

Int. Cl.² B30B *15/16, 15/22, 15/24*

U.S. Cl. 425—149 **22 Claims**



1. In a fluid powered press, a first platen, a second platen, at least one of said platens being movable along a predetermined axis relative to the other platen, one of said platens adapted to support a workpiece thereon, and means for compensating for tilting movement of the movable platen relative to said other platen by creating a force moment acting on said movable platen in a direction opposite to the direction of said tilting movement, said means comprising a plurality of fluid operated leveling units mounted on one of said platens and responsive to tilt of said movable platen, said movable platen being spaced from said leveling units at the start of the platen movement and

adapted to engage said leveling units at a selected position of the movable platen, a series of fluid operated slave units, each of said slave units being coupled in fluid transmitting relation to a respective of said leveling units, and a fluid operated control unit operatively coacting with said slave units, for applying force from said slave units to said control unit, upon said engagement of said movable platen with said leveling units, said control unit being operable to generate pressures in said leveling units via said slave units which will oppose tilting of said movable platen.

4,240,779

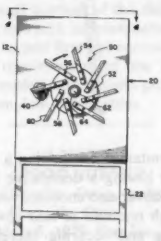
APPARATUS FOR CUTTING AN EXTRUDED PRODUCT

Bartel G. Turk, Richmond, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 627,760, Oct. 31, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 935,930

Int. Cl.³ A01J *21/02*

U.S. Cl. 425—313 **2 Claims**



1. In a shaping device comprising an extruder means, a cutting means and a recovery means; the extruder means cooperating with the cutting means to transfer a heated, extruded food product to the recovery means, the improvement comprising:

I. a cutting means consisting essentially of a rotatable plate to serve as a base for at least one blade:

(a) said blade having a first end and a second end and being secured to said plate at the first end of said blade;

(b) the second end of said blade comprising a cutting edge and extending beyond an edge of said plate;

(c) said cutting edge rotatabley and movably positioned in slideable contact with an outlet of said extruder means said outlet being substantially horizontal; and

(d) said cutting edge having a substantially upward stroke in relation to said outlet, said cutting edge and said outlet cooperating so that all of the extruded product is thrown in an upward direction upon cutting, said upward direction providing time for said cut product to cool; and

II. an enlarged vapor permeable shroud communicating with and surrounding said rotatable plate and said at least one blade, and also communicating with atmospheric air; to thereby contain said product on said upward flight in said air and direct said product to said recovery means while permitting dissipation of heat and evaporated moisture directly into said air.

4,240,780

EQUIPMENT FOR SINTERING UNDER PRESSURE

Jacques P. Carcey, Charavines, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 660,041, Feb. 23, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,164

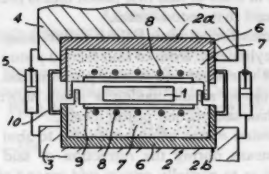
Claims priority, application France, Feb. 27, 1975, 75 06169

Int. Cl.³ B30B *15/02*

U.S. Cl. 425—407 **2 Claims**

1. A treatment module for use in a press having a top plate and a bottom plate substantially parallel to each other and means for pressing said top plate towards said bottom press plate so as to compress an object between said plates selectively at a constant pressure or at an increasing pressure, for sintering under pressure, comprising:

an essentially non-deformable upper element (*2a*) and an essentially non-deformable lower element (*2d*) connected by flexible means (**10**) for holding said upper and lower members in proximity to each other while allowing them to be moved together or apart, said upper and lower elements each containing heating means interposed between an upper and lower face plate of the element, said plates of each element being rigidly spaced apart by a



compression-withstandiing filling in which said electrical heating means are embedded, and

a composite container for containing material to be sintered under compression and heat, said container having a bottom wall and a top closure substantially opposite said bottom wall and also a lateral wall formed by a plurality of elements which cooperate with said bottom wall and said top closure to constitute a composite container capable of being deformed in the event the contents thereof spread laterally when pressure is applied between said bottom wall and said top closure, said bottom wall and said top closure being disposed in said module between said non-deformable upper and lower elements.

4,240,781

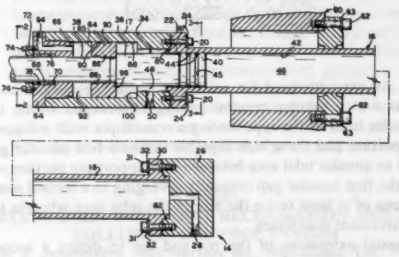
INJECTION MOLDING MACHINE HAVING DUAL TONNAGE TRAVERSING CYLINDER

William T. Flickinger, Marion, and Donald W. Staiger, Mount Gilead, both of Ohio, assignors to HPM Corporation, Mount Gilead, Ohio

Filed Dec. 18, 1978, Ser. No. 970,102

Int. Cl.² B29C *1/16*; B29F *1/00*

U.S. Cl. 425—450.1 **11 Claims**



1. In combination with an injection molding machine having a movable platen adapted to be connected to a die section, a traversing apparatus comprising:

a cylinder barrel having a first cylinder and a second cylinder,

means connected to said barrel for fixing said barrel against axial movement,

an annular first piston means slidably received in said first

cylinder, said first piston means including a first pressure face and an opening extending axially through said piston means,

a second piston means slidably received in said second cylinder and having a second pressure face smaller than said first pressure face, said second piston means including a reduced diameter portion slidably extending through the opening in said first piston means such that the pressure face of said first piston means encircles said reduced diameter portion, said first piston means being sealed against said reduced diameter portion,

said first piston means being connected to said platen,

first means for admitting fluid under pressure into said first cylinder in front of said first piston means pressure face to retract said first piston means,

second means for admitting fluid under pressure into said second cylinder in front of said second piston means pressure face to retract said second piston means,

said first piston means having a much shorter available stroke than said second piston means,

said first piston means being positioned to abut said second piston means during the retraction of said first piston means so as to partially retract said second piston means, and

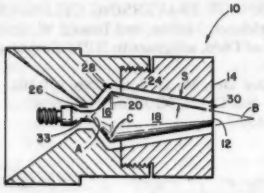
said second piston means being independently movable relative to said first piston means during at least a portion of the stroke of said second piston means.

4,240,782

EXTRUDER HEAD FOR MAKING ELASTOMER-FIBER COMPOSITE HOSE

Donald J. McPhee, Salt Lake City, Utah, and Herbert W. Gray, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Oct. 17, 1979, Ser. No. 85,656
Int. Cl.³ B29D *7/04, 23/05*
U.S. Cl. 425—467 **7 Claims**



1. An extruder head for extruding an elastomer-fiber composite into a tubular conduit having disarranged fibers, the extruder head of the type having a coaxial pin with a support pin portion and die which together define a first annular gap with an annular inlet area between the support pin portion and die, the first annular gap conically diverging to a second annular area of at least twice the size of the inlet area wherein the improvement comprises:

coaxial extensions of the pin and die to define a second annular gap that conically converges from the second annular area to a smaller third annular gap that defines a third annular area, the first annular gap divergence rate being greater than the second annular gap convergence rate and wherein the pin and die may be selectively sized to extrude tubular conduit having an internal diameter from below 0.25 inch to about 3.0 inch with the supporting pin portion having sufficient cross section for supporting the pin.

4,240,783

COMBINED DISPLAY CONTAINER, CIGARETTE LIGHTER, CANDLE HOLDER

William Nevin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 5, 1977, Ser. No. 822,387
Int. Cl.³ F23D *15/04*
U.S. Cl. 431—253 **4 Claims**

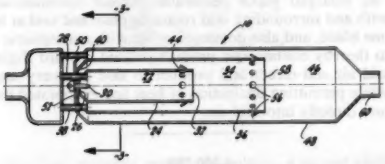
1. A decorated container comprising a transparent encompassing outer cover having a decorative insert disposed and secured within said cover and encompassed thereby including an aperature through one end of said cover having securing means for receiving and securing therethrough objects of predetermined function wherein said cover includes a neck extending from a transverse shoulder said aperture formed through said neck including a reraining within said container in the form of a vessel retaining said insert inclose abuttment with said cover, said cover having a bottom edge extending beyond nsaid insert, said vessel having a all aligned with the bottom edge of said cover, wherein a second vessel for storing articles is fitted rotatably inside first said vessel, each vessel having an opening through a bottom wall thereof, said second vessel including a top wall affixed to said cigarette lighter for manual rotation of said second vessel in order to align said openings together for dispensing articles within said second vessel.

4,240,784

THREE-STAGE LIQUID FUEL BURNER

Hector A. Dauvergne, P.O. Box 884, San Leandro, Calif. 94577

Filed Sep. 25, 1978, Ser. No. 945,228
Int. Cl.³ F23D *15/00*
U.S. Cl. 431—351 **10 Claims**



1. A three stage combustion device wherein the temperature of combustion is maintained at a level that inhibits nitrogen fixation comprising:

(a) an air delivery means for continuously delivering a defined flow of air to said combustion device;

(b) a fuel delivery means for delivering a continuous supply of fuel to said combustion device;

(c) a first combustion stage wherein said fuel delivery means includes means for emitting fuel into said first combustion

stage and wherein said air delivery means includes means for delivering a portion of the defined flow of air, less than the stoichiometric requirements of the delivered fuel, to said first combustion stage;

(d) means for igniting fuel delivered to said first combustion stage wherein ignited fuel is partially combusted products of partial combustion;

(e) a second combustion stage communicating with said first combustion stage wherein the products of partial combustion are emitted to said second combustion stage and wherein said air delivery means includes means for delivering an additional portion of the defined flow of air to said second stage, which in combination with the portion of air delivered to said first stage approximates the stoichiometric requirements of the delivered fuel for substantial combustion producing products of substantial combustion; and

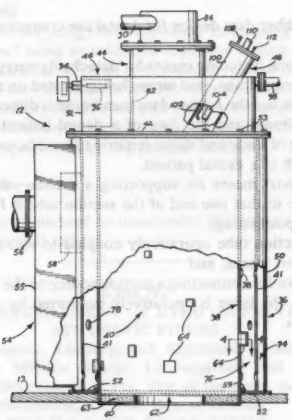
(f) a third combustion stage communicating with said second combustion stage wherein the products of substantial combustion are emitted to said third combustion stage and wherein said air delivery means includes means for delivering an additional portion of the defined flow of air to said third stage, to which in combination with the portions of air delivered to said first and second stages exceeds the stoichiometric requirements of the delivered fuel, for substantially complete combustion producing products of substantially complete combustion.

4,240,785

WOOD BURNER

John H. Crawford, Corvallis, Oreg., assignor to Leading Plywood Corporation, Corvallis, Oreg.

Filed Mar. 5, 1979, Ser. No. 17,431
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—352 **9 Claims**



1. Apparatus for burning combustible particles to heat circulated air, said apparatus comprising

an upright housing,

an upright, substantially cylindrical liner disposed within said housing, forming a combustion chamber having a fuel-infeed opening at its upper end and a heated gas discharge opening at its lower end,

an upright, intermediate wall member disposed between said housing and said liner, said wall member forming, with said housing and said liner, outer and inner gas-receiving spaces, respectively, said well member having perforations allowing gas flow between said spaces,

air inlet means through which air may be injected into said outer space, with such air flowing through said perforations into said inner space, forming therein a layer of pressurized air surrounding said liner,

vent means in said liner for directing such pressurized air into the combustion chamber, substantially tangentially to the inner wall thereof, thus to establish within said chamber a vortexing gas dischargeable through said discharge opening,

particle dispersion means for supplying such particles, in dispersed form, into an upper portion of said chamber, and

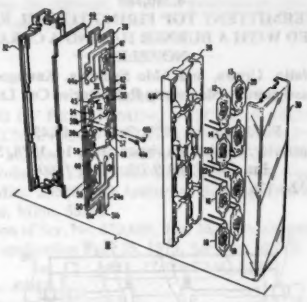
ignition means disposed adjacent said upper portion for initiating combustion of said particles therein, such combustion being supported by, and acting to heat, such vortexing gas within said chamber.

4,240,786

SWITCHING DEVICES FOR A FLASH LAMP ARRAY AND METHOD

Herman R. Heytmeijer, Hanover Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1978, Ser. No. 913,777
Int. Cl.³ F21K *5/00*
U.S. Cl. 431—359 **9 Claims**



1. In combination with a flash lamp array including a plurality of flash lamps each having a vitreous envelope hermetically sealed to a pair of lead-in wires, a two-sided circuit board having sequencing circuitry affixed to one side thereof and having said lamps connected thereto to fire individually and in sequence, the improvement which comprises:

solid-state thermally activated switches located externally of said lamps affixed to said one side of said circuit board and forming a part of said sequencing circuitry, each of said switches located in close proximity to one of said flash lamps to receive thermal energy emitted by said proximate flash lamp upon its being fired and change from a non-conductive state to a conductive state, said switches comprising a uniform mixture of predetermined proportions of finely divided silver carbonate, finely divided silver oxide, and finely divided hydrophobic silica, and said mixture adhered as a unitary mass of predetermined dimensions to said circuit board by means of an organic polymer binder.

4,240,787

DRYING OVEN WITH HEAT RECLAMATION AND AIR POLLUTION CONTROL SYSTEM

Aziz A. Jamaluddin, 1912 Nursery Rd., Woodlands, Tex. 77380

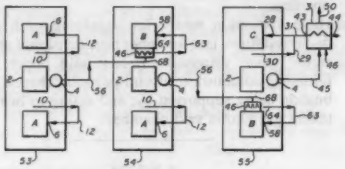
Filed Jun. 19, 1979, Ser. No. 50,085
Int. Cl.³ F27D *7/04*; F27B *19/00*
U.S. Cl. 432—21 **20 Claims**

15. A method of operating a plurality of side loading batch ovens in sequence which treats materials producing combustible emissions comprising

circulating large volumes of relatively low temperature air containing combustible gases from each oven at a low velocity through combustion units to oxidize part of the

combustible gases, heat said air, and return the air and combustion products to the respective ovens,

exhausting air containing combustible gases from each oven to the next succeeding oven at a predetermined low rate, completely oxidizing the combustible gases in said air exhaust to produce a low volume of high temperature combustion products, and



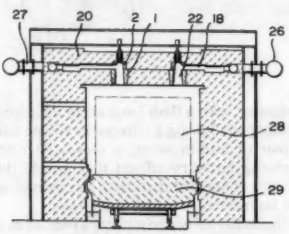
mixing said low volume of high temperature combustion products at a high velocity with said large volume of air circulating at low velocity from each oven through its respective combustion unit.

4,240,788

INTERMITTENT TOP FIRING TUNNEL KILN EQUIPPED WITH A BURNER HAVING A CERAMIC AIR NOZZLE

Kiyoshi Naito, Urawa, and Akio Syukuya, Kawagoe, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,452
Claims priority, application Japan, Jun. 14, 1978, 53-70794
Int. Cl.³ F27B *9/02;* **F24H** *1/00*
U.S. Cl. 432—136 **1 Claim**



1. An intermittent top firing tunnel kiln comprising kiln walls and a kiln ceiling defining a heating chamber, a burner having a air nozzle assembly mounted to the kiln ceiling, said kiln ceiling being provided with a wind box defining an air mixing chamber and with a burner tile defining a conical opening communicating at one end with said air mixing chamber and at the other end with said heating chamber, a burner support tile, an air nozzle assembly having a ceramic air nozzle mounted to said wind box via said burner support tile and communicating with said air mixing chamber, a metallic air supply pipe connected to said ceramic air nozzle, a metal fixture supporting said air nozzle assembly in said kiln ceiling, an oil nozzle assembly located at the center in said air nozzle assembly for introducing oil into said air mixing chamber, the oil nozzle assembly and the ceramic air nozzle being substantially coterminus and secondary air supply means communicating with said air mixing chamber.

4,240,789

DENTAL APPLIANCE

Harold B. Rosenthaler, 8201 Henry Ave., Apt. P25, Philadelphia, Pa. 19128

Filed Sep. 12, 1978, Ser. No. 941,458
Int. Cl.³ A61C *5/14, 17/04*
U.S. Cl. 433—136 **14 Claims**

1. A rubber dam device for dental use comprising in combination,

(a) a frame including means for detachably carrying a rubber dam membrane, said means being located on said frame so that in use the rubber dam membrane is disposed between said frame and the face of a dental patient, said frame being of a size and shape requiring that it be external to the mouth of a dental patient,

(b) support means for supporting a suction tube from said frame so that one end of the suction tube is free for variable positioning,

(c) a suction tube operatively coupled to said suction tube support means, and

(d) means for connecting a suction source to the suction tube when the latter is operatively supported by said support means.

4,240,790

PROCESS FOR DYEING AND PRINTING FLAT TEXTILE MATERIAL CONTAINING SYNTHETIC FIBERS

Hans-Ulrich von der Eltz, Willibrachtstrasse 14, D 6000 Frankfurt am Main 50, Fed. Rep. of Germany, assignor to Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,225

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757259

Int. Cl.[3] D06P *3/82*

U.S. Cl. 8—529 9 Claims

1. A process for dyeing and printing flat textile articles containing synthetic fibers endowing an optimum handle to the goods comprising the steps of

(a) pretreating said textile in rope form with at least one pretreatment bath at 80°–140° C. followed by drying;

(b) impregnating said textile at full width with a dye in an aqueous medium;

(c) fixing the dyestuff;

(d) aftertreating the dyed textile again in rope form under as little tension as possible in at least two aftertreatment baths at least one of which having a temperature of 80°–140° C.; and

(e) advancing the thus treated textile through a dwelling chamber while changing the position of the folds in the textile rope.

4,240,791

DYEING METHOD FOR FIBROUS PRODUCTS

Kanji Sato; Kazuyoshi Kushibe; Masaru Nishii; Yasuhiro Kanaya, and Yasumasa Kawabe, all of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

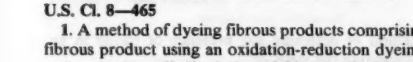
Filed Feb. 15, 1979, Ser. No. 12,341

Claims priority, application Japan, Jul. 18, 1978, 53-86769

Int. Cl.[3] D06P *1/22, 1/30;* C09K *3/00*

U.S. Cl. 8—465 4 Claims

1. A method of dyeing fibrous products comprising dyeing a fibrous product using an oxidation-reduction dyeing type dye and an aqueous alkali solution of thiourea dioxide as a reducing solution with the reduction of the dye with said aqueous alkali solution of thiourea dioxide being carried out in the presence of one or more dialdehyde compounds selected from dialdehyde compounds represented by the general formula



OHC—R—CHO (I)

in which R is a saturated or unsaturated aliphatic or aromatic organic compound radical.

4,240,792

AFTER-TREATMENT OF DYED OR PRINTED SYNTHETIC FIBERS

Ulrich Baumgarte, Limburgerhof; Sigismund Heimann, Ludwigshafen; Michele Vescia, Limburgerhof, and Johannes Winkler, Birkenau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,587

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744607

Int. Cl.[3] D06P *5/02*

U.S. Cl. 8—607 8 Claims

1. A process for the after-treatment of dyed or printed synthetic fibers, or of materials which consist of synthetic fibers or contain a mixture of synthetic fibers and other fibers, using an aqueous solution which contains from 0.2 to 20 g/l of a mixture of

(a) from 80 to 20 parts by weight of a reductonate selected from the group consisting of monohydroxyacetone, dihydroxyacetone, dihydroxybutanone and glycolaldehyde, and

(2) from 20 to 80 parts by weight of one or more nonionic and/or anionic surfactants, the after-treatment being carried out at from 40° to 100° C. and at a pH about 8.

4,240,793

PREPARATION OF A HIGH-HIDING AND DEEPLY COLORED PIGMENTARY FORM OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID BIS-(4'-ETHOXYPHENYL)-IMIDE

Fritz Graser, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,123

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842721

Int. Cl.[3] C09B *67/00;* C07D *21/22*

U.S. Cl. 8—594 7 Claims

1. A process for the preparation of a high-hiding, deeply colored pigmentary form of perylene-3,4,9,10-tetracarboxylic acid bis-(4'-ethoxyphenyl)-imide by heating the finely divided crude pigment, in the form of agglomerates formed from primary particles of length 0.15 μm or less, in an organic liquid or a mixture of an organic liquid and water at from 30° to 200° C., and isolating the pigment, in which process cyclohexanone is used as the organic liquid.

4,240,794

METHOD OF PREFORMING VASCULAR GRAFTS OF HUMAN AND OTHER ANIMAL ORIGIN

Daniel G. Holman, 12743 Radisson Rd. NE., Blaine, Minn. 55434; Robert A. Ersek, 5416 Diamondhead Dr. East, Bay St. Louis, Miss. 39520, and Arthur A. Beisang, 2263 Dellwood, Roseville, Minn. 55113

Continuation of Ser. No. 872,605, Jan. 26, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 52,068

Int. Cl.[3] A61L *17/00;* C14C *3/08*

U.S. Cl. 8—94.11 3 Claims

1. The method of conforming a human umbilical cord to a predetermined configuration for implanting in a human body which method comprises the steps of:

(a) flushing the cord and thereafter mounting the cord upon a mandrel of the desired configuration;

(b) initially immersing the mounted cord and manlvml into an aqueous solution of ethyl alcohol containing more than about 70% of ethyl alcohol until said cord is substantially dehydrated and shrunk onto said mandrel; and

(c) thereafter immersing the dehydrated and mounted cord in an aqueous solution selected from the group consisting of dialdehyde starch in water and gluteraldehyde in water, wherein said solution contains more than about 1% of said aldehyde, for a period sufficiently long to permit the configuration to become fixed.

4,240,795

TREATMENT OF TEXTILES WITH MODIFIED ALPHA-OLEFINS

William T. Hendrix, Chester, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 56,022

Int. Cl.[3] D06M *13/02, 13/10, 15/30*

U.S. Cl. 8—115.6 10 Claims

1. In a process for treating textiles comprising impregnating a textile with a solution of a cross-linking aminoplast resin and a textile resin catalyst, the improvement wherein the solution contains about 0.05 to 5.0 percent, based on the weight of the solution, of an emulsion of an oxidized alpha-olefin having at least 20 carbon atoms, said oxidized alpha-olefin having an acid number of about 1 to about 70.

4,240,796

METHOD OF TREATING CAPILLARY FIBERS

Hikaru Nakanishi, Kawasaki, Japan, assignor to Senko Medical Instruments Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,612
Claims priority, application Japan, Aug. 31, 1977, 52-104634; Jun. 7, 1978, 53-68697
Int. Cl.³ B05D 5/00
U.S. Cl. 8—137.5 4 Claims

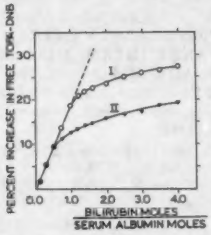
1. In the method of forming capillary fibers by extruding polymeric material into a coagulating solution while discharging an oily substance selected from the group consisting of ocytl alcohol and isopropyl myristate into the interior of said extrusion, adding glycerol thereto as a softening agent, and removing the oily substance, the improvement comprising selectively removing said oily substance without removal of said glycerol by washing said extruded fibers with carbon chloride fluoride or a mixture of carbon chloride fluoride with material capable of forming an azeotrope therewith.

4,240,797

ASSAY FOR RESERVE BILIRUBIN BINDING CAPACITY

Jen C. Hsia, Don Mills, Canada, assignor to The Governing Council of the University of Toronto, Toronto, Canada

Filed Oct. 18, 1977, Ser. No. 843,490
Int. Cl.³ G01N 23/48, 24/00
U.S. Cl. 23—230 B 9 Claims



1. Assay method for determining values relating to the reserve bilirubin-binding capacity of a serum albumin-containing aqueous specimen comprising the steps of adding to the specimen a molar excess, in terms of albumin content, of a water-soluble spin label comprising a dianionic compound that binds to the first specific high-affinity bilirubin-binding site on the albumin, and is quantitatively displaceable from that site into solution in the presence of bilirubin, titrating the specimen with a standard bilirubin solution, subjecting the specimen with electron spin resonance spectroscopy, obtaining values indicative of changes in the height of spectral peaks associated with free spin label displacement with increased bilirubin addition, and deriving therefrom values indicative of reserve bilirubin-binding capacity.

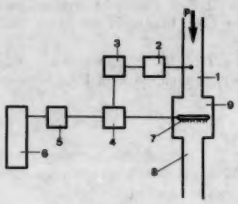
4,240,798

METHOD AND APPARATUS FOR REDUCING OZONE

Rurik Wendelin, Järfälla, and Ladislav Sipek, Täby, both of Sweden, assignors to AGA Aktiebolag, Lindingo, Sweden

Filed Jul. 5, 1979, Ser. No. 54,887
Int. Cl.³ G01N 27/62, 27/00; G05D 7/00
U.S. Cl. 23—230 A 6 Claims

1. A method of decomposing ozone in aircraft, comprising
(a) measuring by means of an ozone-monitoring device the level of ozone at a first location upstream of a second location in a flow of air passing to the cabin of said aircraft;
(b) transmitting a signal from said monitoring device to an amplifier when the level of ozone in said first location is above a first limit level;
(c) amplifying said signal to a given value;
(d) transmitting said amplified signal to a valve means arranged to open in reference to said amplified signal, and



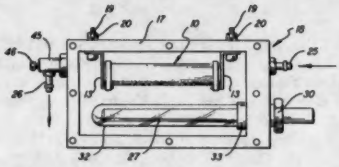
(e) feeding nitric oxide through said valve means to said second location in said air-flow.

4,240,799

SENSING THE PRESENCE OF OZONE

John D. Ryerson, Holland Patent, N.Y., assignor to Energy for Independence, Inc., Holland Patent, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,210
Int. Cl.³ G01N 27/04; H01C 7/00
U.S. Cl. 23—232 E 16 Claims



1. The method of detecting the presence of ozone in an atmosphere including the steps of
exposing a solid state sensor that is capable of changing its conductivity in the presence of ozone to an atmosphere,
detecting the change in conductivity of said sensor upon its exposure to said atmosphere, and
flooding the sensor with ultraviolet radiation after exposure to said atmosphere to restore it to its initial pre-exposure conductive state whereby the sensor is able to carry out another detecting cycle.

4,240,800

PROCESS FOR TREATMENT OF BAGASSE FOR THE PRODUCTION OF OIL BINDERS

Karl O. P. Fischer, 302 - 124 Cook St., Chilliwack, British Columbia, Canada

Filed Oct. 23, 1978, Ser. No. 954,001
Int. Cl.³ C10L 1/04
U.S. Cl. 44—51 3 Claims

1. A method for absorbing oil comprising spreading on such oil an absorbent comprising about 97 weight percent oleophilic, hydrophobic substantially sugar-free bagasse and about 3 weight percent water capable of taking-up an amount of oil equalling from about 15 to 20 times its weight.

4,240,801

DIESEL FUEL COMPOSITION

Edwin A. Desmond, Jr., Grosse Pointe, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 942,114, Sep. 13, 1978, abandoned. This application May 31, 1979, Ser. No. 44,310
Int. Cl.³ C10L 1/22
U.S. Cl. 44—57 23 Claims

1. An improved fuel composition comprising a major

amount of a fuel oil and a minor amount sufficient to inhibit particulate emission, of (a) a cyclopentadienyl manganese tricarbonyl, and (b) a lower alkyl or cycloalkyl nitrate.

4,240,802

INTERNAL COMBUSTION ENGINE FUEL COMPOSITION CONTAINING TOXIC AGENT FOR DISPERSION IN THE EXHAUST FUMES OF THE ENGINE

Wallace H. Nichols, Jr., 4752 Lark Ridge Cir., Sarasota, Fla. 33581

Division of Ser. No. 852,315, Nov. 17, 1977, Pat. No. 4,173,084. This application May 9, 1979, Ser. No. 37,461

Int. Cl.³ C10L *1/20, 1/26*

U.S. Cl. 44—58 **10 Claims**

1. An internal combustion engine gasoline fuel composition for dispensing a toxic agent through the exhaust of an internal combustion engine comprising a mixture consisting essentially of a minor amount of one or more organic toxic agents effective to control target pests and a major amount of internal combustion engine fuel selected from the group consisting of gasoline and gasoline/kerosene mixtures, the proportion of fuel in said mixture being sufficient to enable operation of an internal combustion engine fueled thereby, said toxic agents being selected from the class consisting of insecticides, fumigants and herbicides which are soluble in said fuel and refractory to fuel combustion conditions of the fueled engine, said organic toxic agents being present in said mixture in an amount at least sufficient to provide, in the exhaust of the fueled engine, an amount of said toxic agent which is effective against such target pests, said mixture optionally containing a minor amount of engine oil for use in two-cycle engines, said engine fuel being substantially completely combustible in the internal combustion engine so that the exhaust comprises the products of combustion of said fuel and said toxic agent dispersed therein in vapor form.

4,240,803

FUEL CONTAINING NOVEL DETERGENT

Harry J. Andress, Jr., Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,604

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—63 **6 Claims**

1. A liquid hydrocarbon fuel compsition comprising fuel and a detergent amount of an alkenylsuccinimide prepared by reacting, at a temperature within the range of from about 150° C. to about 250° C., an alkenylsuccinic acid or anhydride, wherein the alkenyl is derived from a mixture of olefins having the composition:

Ingredient	% By Wt.	Other
Olefin		
C_{16}	2, maximum	
C_{18}	5–15	
C_{20}	42–50	
C_{22}	20–28	
C_{24}	6–12	
C_{26}	1–3	
C_{28}	2, maximum	
Alcohol	10, maximum	
Paraffin	5, maximum	
Iodine No.		74, minimum
Peroxide		10 ppm, maximum
Olefin types		
Vinyl	28–44	
Branched	30–50	
Internal	26–42	

with a polyalkylamine polyamine of the formula

$$NH_2—(RNH)_nR—NH_2$$

wherein R is alkylene having from 1 to 5 carbon atoms and n is from 0 to 10.

4,240,804

ALKYL ACRYLATE ADDUCTS OF POLYAMINES, ETHER AMINES AND ETHER POLYAMINES

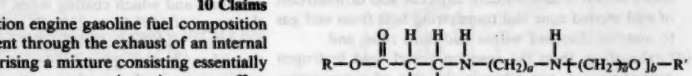
Theodore C. Shields, Ashland, Ky., assignor to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Jan. 24, 1978, Ser. No. 871,914

Int. Cl.³ C10L *1/22*; C07C *101/26, 101/30, 69/66*

U.S. Cl. 44—71 **49 Claims**

1. An additive suitable for liquid hydrocarbon fuels represented by the formula:



wherein R is a saturated or unsaturated straight or branched hydrocarbon chain of 2 to 30 carbon atoms provided that when b=0, R is a saturated or unsaturated straight or branched hydrocarbon chain of 8 to 30 carbon atoms; R′ is a saturated or unsaturated straight or branched hydrocarbon chain of 2 to 30 carbon atoms; R‴ is hydrogen, methyl or ethyl; a is an integer from 2 to 3; and b is 0 or 1, and mixtures thereof.

4,240,805

PROCESS FOR PRODUCING HYDROGEN CONTAINING GAS

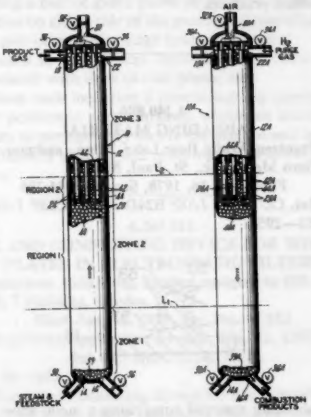
Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 16, 1979, Ser. No. 21,393

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ C01B *3/36, 3/38, 3/46*

U.S. Cl. 48—214 R **15 Claims**



1. In a method for producing a hydrogen containing gas from a hydrocarbon feedstock and steam in a reaction vessel, said vessel including three zones in series gas flow relationship, the steps of:

alternately making a hydrogen containing gas in the reaction vessel and regenerating the reaction vessel, wherein the step of making gas includes:

(a) preheating, in a first of said zones, at least the steam or a mixture of both the steam and feedstock using sensible

heat stored in material disposed within said first zone, the stored heat in said first zone having been provided by said regenerating step;

(b) cracking and reforming, in a second of said zones substantially adjacent and downstream of said first zone, a mixture of said feedstock and said preheated steam using the sensible heat in said mixture and the sensible heat stored in material disposed within said second zone, thereby producing the hydrogen containing gas, the stored heat in the second zone having been provided by said regenerating step, said second zone including a region of reform catalyst;

(c) cooling the hydrogen containing gas made in said second zone by passing said gas through a third of said zones which is substantially adjacent and downstream of said second zone and transferring heat from said gas to material disposed within said third zone; and

(d) exhausting, from the reaction vessel, said hydrogen containing gas; and wherein the step of regenerating includes:

(e) preheating, within said third zone, a hydrogen purge gas using the sensible heat in the material disposed within said third zone, the heat in said third zone being provided by step (c);

(f) preheating an oxygen containing gas carried within conduit means disposed within said reaction vessel and separate from the hydrogen purge gas using heat from within said vessel;

(g) mixing, within said second zone, said preheated oxygen containing gas from said conduit means with said preheated hydrogen purge gas from said third zone, and combusting said mixture within said second zone but outside of said region of reform catalyst to heat the material within said second zone;

(h) cooling the products of combustion from said second zone by passing said products through said first zone and transferring heat from said products to material disposed within said first zone; and

(i) exhausting from the reaction vessel, said cooled combustion products.

4,240,806

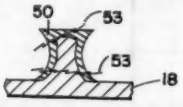
ABRADING MATERIAL

John J. Frantzen, White Bear Lake, Minn., assignor to Minnesota Micro Metal, Inc., St. Paul, Minn.

Filed Aug. 16, 1978, Ser. No. 934,206

Int. Cl.³ B24B *1/00;* **B24D** *11/00;* **C23F** *1/02*

U.S. Cl. 51—295 **6 Claims**



1. An abrading material comprising a metal sheet having a multiplicity of spaced teeth on the surface shaped so as to have a generally flat polygonal top surface with sharp cutting corners and planing edges, said corners and edges having a hardened layer at the surface to a depth that still leaves unhardened supportive metal inside, and said teeth having a base portion which is integral with the sheet and of size larger than said top surface to form a mechanically strong nonhardened support for said corners and edges, said teeth having slanted sides that slant outward from the smaller top surface to the larger base portion.

4,240,807

SUBSTRATE HAVING A THERMOPLASTIC BINDER COATING FOR USE IN FABRICATING ABRASIVE SHEETS AND ABRASIVE SHEETS MANUFACTURED THEREWITH

Frank J. Kronzer, Munising, Mich., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 2, 1976, Ser. No. 646,386

Int. Cl.³ C09K *3/14*

U.S. Cl. 51—295 **16 Claims**

1. A coated backing material for use in fabricating flexible abrasive sheets, said backing material comprising a flexible web substrate having on one surface a thermoplastic adhesive coating comprised at least in part of a polymeric latex, which coating is in a non-tacky solidified condition at ambient temperatures and which coating when heated to a temperature in the range of 150° C. to 220° C. is softened to a viscous fluid condition, said fluid condition being characterized by the fact that when abrasive grit particles are deposited on the softened coating, gravity forces alone will permit the grit particles to sink into said softened coating to the extent that said particles will become embedded therein while said coating is in said heat-softened condition, and remain firmly bonded therein after the heat is removed and the coating resolidified by cooling.

12. A flexible abrasive sheet comprising the backing material of claim 1 wherein said coating has embedded in its surface a layer of uniformly distributed abrasive grit particles, and said layer has applied thereover a grain size coating.

4,240,808

PROCESSING AQUEOUS EFFLUENT LIQUORS FROM DEGASIFICATION OR GASIFICATION OF COAL

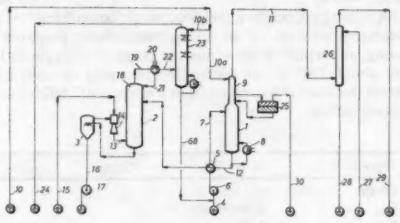
Alfred Garber, Linz, Austria; Paul Wiesner, Oberursel, Fed. Rep. of Germany; Hans M. Stonner, Schwalbach, Fed. Rep. of Germany; Fritz Wöhler, Frankfurt am Main, Fed. Rep. of Germany, and Alfred Schmidt, Vienna, Austria, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,184

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744437

Int. Cl.³ B01D *19/00, 53/14*

U.S. Cl. 55—48 **2 Claims**



1. In the processing of aqueous effluent liquors which become available as a result of the degasification or gasification of coal, comprising extracting the organic impurities contained in the liquor with an organic solvent which is insoluble or has only a low solubility in water, processing the extract to form raw phenol and fresh solvent, removing residual solvent from the aqueous waste liquor by stripping with gases after the extracting step, scrubbing the gases to recover organic solvent, stripping NH_3 from the aqueous effluent liquor in a driving-off column after the extracting step, condensing overhead product of the driving-off column and recycling part of the condensate to the top of the column, including the steps of

(a) removing part of the overhead product of the driving-off column as uncondensed vapors;

(b) transferring the vapors from (a) to a scrubbing column, in

steps condensing water, small amounts of ammonia and all acid gases in the upper part of said scrubbing column, and withdrawing pure ammonia overhead;

(c) withdrawing the condensate which contains all acid gases from the upper part of the scrubbing column, transferring the condensate to a separate reboiler, and heating the transferred condensate in said reboiler;

(d) withdrawing the sump product of the scrubbing column, transferring it into a pressurized de-acidification column, and withdrawing therefrom overhead under pressure the acid gases H_2S and CO_2; and

(e) recycling to the driving off column the sump product of the pressurized de-acidification column consisting of a solution high in ammonia content,

improvement which comprises

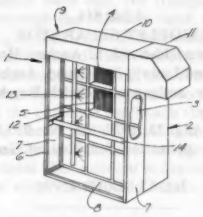
(f) feeding liquid consisting essentially of cold water at a low rate to the top of the scrubbing column of (b).

4,240,809

ELECTROSTATIC PRECIPITATOR HAVING TRAVERSING COLLECTOR WASHING MECHANISM

Carl A. Elsbernd, Cincinnati, and James C. Bricker, Waynesville, both of Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Filed Apr. 11, 1979, Ser. No. 29,024
Int. Cl.³ B03C 3/78
U.S. Cl. 55—118 **12 Claims**



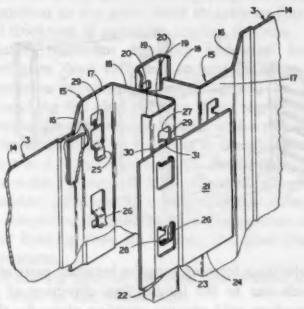
1. An electrostatic precipitator air cleaner comprising a rack-like housing, at least one precipitator cell disposed within said housing, said cell including means for collecting airborne particles admitted into said cell and an air outlet adjacent said collecting means for exhausting an airstream comprising relatively clean air from said collecting means, a vertically disposed pipe-like spray header spaced adjacent to said collecting means, at least one spray nozzle attached to said header for directing a spray of wash or rinse fluid in order to remove said particles from said collecting means, means for supplying said fluid to said nozzle, and means for traversing said header horizontally across said precipitator cell, said traversing means comprising a rail-like guide member extending the width of said precipitator cell, a trolley supporting one end of said header and mounted for reciprocating movement along said guide member between a home position and an extended position, a horizontally mounted helical drive screw extending parallel to said guide member, rail-like drive screw support means extending parallel to said rail-like guide member for rotatably supporting said drive screw along substantially its entire length, means for rotating said screw, and a follower connected to said trolley containing a gear-like member engaging said screw, rotation of said screw producing linear motion of said follower to move said header across said precipitator cell.

4,240,810

COLLECTING ELECTRODE PLATE ASSEMBLY

Alfred Frauenfelder, Zollikerberg, Switzerland, assignor to ELEX-AAF AG, Zurich, Switzerland

Filed May 16, 1979, Ser. No. 39,743
Int. Cl.³ B03C 3/47
U.S. Cl. 55—143 **11 Claims**



1. A collecting electrode plate assembly for a flow-through housing of an electrostatic precipitator, comprising:

a collecting electrode;

electrode suspension means adapted to be supported by the housing of the precipitator;

said collecting electrode including a plurality of successively aligned similar panels pivotally suspended from said suspension means and spaced apart one from the other for swinging movement of said panels during electrode cleaning operations;

said panels each including a pair of spaced edge beam members and a central web portion extending between and connecting said beam members;

guide means at each juncture of said successive panels including a pair of guide plates disposed in opposed spaced relation on either side of the panels and spanning a respective pair of opposing edge beam members;

slot means in one of said opposing edge beam members associated with each of said plates; and

said plates each including a protruding clip portion removably positioned and contained within an associated slot means to mechanically secure the plate to said beam member, thereby aligning and retaining the panels in a common plane.

4,240,811

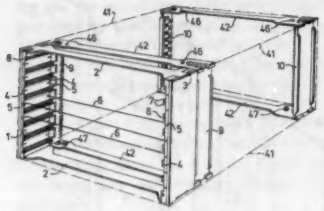
FIXING AND CONNECTING DEVICE FOR WIRES AND PLATES IN ELECTROSTATIC FILTERS

Bertil Jacobsson, Lidköping, Sweden, assignor to Elfi Elektrofilter AB, Lidköping, Sweden

Filed Jun. 12, 1979, Ser. No. 47,912
Claims priority, application Sweden, Jun. 22, 1978, 7807173
Int. Cl.³ B03C 3/08, 3/12
U.S. Cl. 55—143 **6 Claims**

1. A fixing and connecting device for use in an electrostatic filter configuration which includes a charging section and a separation section and uses wires and plates as charging and collecting components and the charging section has two or more wire stretches between each pair of plates, the wire stretches are mutually parallel and each positioned halfway between the pairs of plates, and the separation section has mutually parallel plates with each plate having a different potential than the adjacent plates, said device for fixing the wires and plates, comprising: two identical gable components positioned parallel to and spaced apart from each other; two identical and mutually parallel spacing parts fixed to and between the ends of said gables provide a frame with quadrangu-

lar cross section; each gable in its two longest side edges being provided with a number of slits perpendicular to the longitudinal direction of said side edges; the distance between two adjacent said slits being the same for all slits; said slits enabling a length of charging wire to be wound to and fro with wire stretches between said two gables to enable the stretches of wire to be parallel and the inner faces of said gables comprise



pairs of projections forming grooves between pairs of said slits and perpendicular to the longitudinal direction of said two longest side edges, said grooves enabling plates for the charging section to be received therein and further including fore and aft pairs of spaced apart supporting leg components behind said frame, each pair spaced from the other to constitute the fore and aft corners of a separation section.

4,240,812

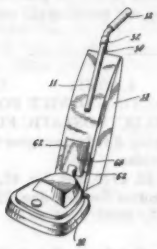
VACUUM CLEANER BAG ASSEMBLY

Harold W. Schaefer, Bloomington; Joyce K. Thomas, and Samuel E. Hohulin, both of Lexington, all of Ill., assignors to National Union Electric Corporation, Greenwich, Conn.

Division of Ser. No. 857,094, Dec. 5, 1977. This application Jul. 9, 1979, Ser. No. 55,617

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—369 **3 Claims**



1. In an elongated porous outer bag for a vacuum cleaner, said elongated porous outer bag having an elongated closure on one side thereof, said bag extending substantially vertically from an inlet at one end for receiving air the improvement wherein said bag has a pocket affixed to the material of the lower portion of said bag on the side thereof opposite said closure, said pocket comprising a sheet of material heat sealed to the material of said porous bag, the other end of said bag being open, a flap covering said open end and being affixed only to said opposite side and extending into the bag, said closure intersecting said open end.

4,240,813

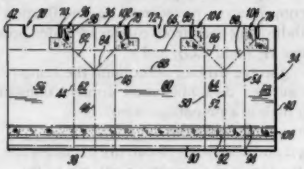
REINFORCED VACUUM CLEANER FILTER BAG

John E. Fesco, South Hempstead, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,418

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—381 **13 Claims**



8. A blank for a vacuum cleaner filter bag, said blank comprising a sheet of air permeable filter material provided with a pair of transverse edges and a plurality of elongated fold lines for defining therebetween a first panel, side panels, and a rear panel when said blank is folded thereon, a cut-out section provided on said blank for defining access means into the filter bag, and at least one of heat, self-stick and pressure sensitive adhesive means pre-applied in stripes on said blank adjacent said transverse edges for preventing tears at the edges of the bag when in a folded condition.

4,240,814

DROPLET SEPARATOR

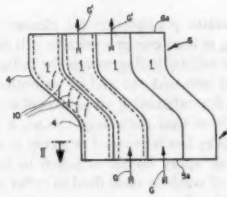
Ulrich Regehr, Süsterfeldstr. 65, 51 Aachen; Horst Hannemann, Herzogenrath, and Ludwig Speitkamp, Aachen, both of Fed. Rep. of Germany, assignors to Ulrich Regehr, Aachen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,915

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738257

Int. Cl.³ B01D *45/16*

U.S. Cl. 55—423 **8 Claims**

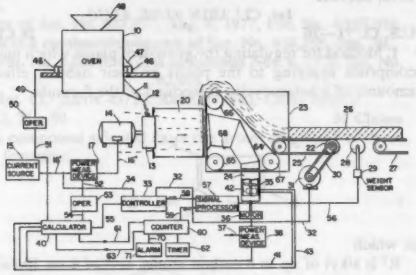


1. A droplet separator for removing drops of liquid from a gas stream comprising a stack of corrugated plates each generally planar but having a plurality of corrugations formed by alternating crests and troughs of given wavelength and amplitude with the troughs of adjacent plates registering generally with one another to define flow passages for said gas stream extending generally in a flow direction between inlet and outlet sides of the stack, the crests of said adjacent plates contacting one another between said flow passages, each of said flow passages being formed with at least two bends in the plate plane effecting direction change in the gas flowing therethrough, the corrugations all being of trapezoidal cross section, each of said flow passages being partitioned centrally by a partition extending in the direction of the amplitude of the corrugations.

4,240,815
METHOD FOR DETERMINING THE SURFACE WEIGHT OF A MINERAL WOOL MAT

Hans Brelen, Skövde; Stellan Dahlberg, Tiden, and Ulf Aberg, Skövde, all of Sweden, assignors to Rockwool Aktiebolaget, Skovde, Sweden

Filed Apr. 24, 1979, Ser. No. 33,023
Claims priority, application Sweden, Apr. 28, 1978, 7804923
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—2 **14 Claims**

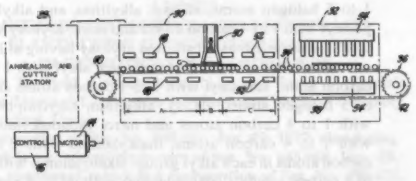


1. A method for improving the uniformity of surface weight in a mineral wool mat, produced from a mineral melt which is fibrated in a fibration unit and is introduced into a gas-formed stream providing a transport medium for the fibers, whereafter the transport medium along with the mineral fiber material carried thereby is caused to move to a movable collector band on the one side of which the mineral fiber material is deposited to form the mineral wool mat, the transport medium being caused to pass through the collector band, said method comprising measuring at least one variable which is characteristic of the transport medium and which varies in relationship to the amount of mineral wool deposited, and feeding the results of the measuring step to a control device for controlling the speed of movement of the collector band such that the speed of the collector band is varied in direct relation to the amount of mineral fiber material deposited on the collector band, whereby the mineral fiber material is deposited on the collector band with an evenly distributed surface weight.

4,240,816
METHOD AND APPARATUS FOR FORMING TEMPERED SHEET GLASS WITH A PYROLYTIC FILM IN A CONTINUOUS PROCESS

Harold A. McMaster, 420 Walter St., Woodville, Ohio 43469, and Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551

Filed Feb. 9, 1979, Ser. No. 10,573
Int. Cl.³ C03B *27/00*; C03C *17/27*
U.S. Cl. 65—60 R **3 Claims**



1. A method for manufacturing a coated, tempered glass sheet comprising the steps of:

heating the glass sheet to a temperature sufficient for pyrolysis;

applying to the glass sheet, while at a temperature sufficient for pyrolysis, a coating composition which reacts on the surface of the glass to form a pyrolytic coating thereon;

immediately thereafter applying additional heat to the glass sheet for restoring to the glass sheet heat lost during the application of said coating, whereby the sheet is again heated to a temperature sufficient for pyrolysis;

immediately, and while the glass sheet remains at a temperature sufficient for pyrolysis, applying additional coating composition to the glass sheet thereby to form an additional thickness of pyrolytic coating thereon;

immediately thereafter applying additional heat to the coated glass sheet sufficient to heat the glass sheet to a temperature sufficient for tempering; and

then quenching the glass sheet to effect tempering.

2. Apparatus for coating a glass sheet with a pyrolytic film of predetermined thickness by applying to the glass sheet a material adapted to pyrolytically react on the surface of the glass sheet to form the pyrolytic film thereon while the glass sheet is at a temperature sufficient for pyrolysis of said material and for thereafter tempering the glass sheet, said apparatus comprising:

an initial heating zone for heating the glass sheet to said temperature;

an initial coating zone for applying said material to said glass sheet while at said temperature;

a subsequent heating zone for heating the glass sheet to said temperature;

a subsequent coating zone for applying said material to said glass sheet while at said temperature;

a station for heating the glass sheet to a temperature sufficient for tempering;

a quenching station for rapidly cooling the glass sheet to effect tempering thereof;

conveyor means for moving the glass sheet through said apparatus; and

drive means for driving said conveyor means to move the glass sheet into said initial heating zone for a period to heat the glass sheet to the temperature sufficient for pyrolysis of said material, then into a said initial coating zone for a period to apply to the glass sheet only sufficient of said material to form the pyrolytic film to a thickness less than said predetermined thickness, thereafter into said subsequent heating zone for a period to heat the glass sheet to a temperature sufficient for pyrolysis of said material; then into said subsequent coating zone for additional application of said material to said glass sheet to increase the thickness of said pyrolytic film to said predetermined thickness, and thereafter sequentially into said station for heating the glass sheet to a temperature sufficient for tempering and into said quenching station.

3. Apparatus for coating a glass sheet with a pyrolytic film of predetermined thickness by applying to the glass sheet a material adapted to pyrolytically react on the surface of the glass sheet to form the pyrolytic film thereon while the glass sheet is at a temperature sufficient for pyrolysis of said material and for thereafter tempering the glass sheet, said apparatus comprising:

a heating zone for heating the glass sheet to said temperature;

a coating zone for applying said material to said glass sheet while at said temperature;

a station for heating the glass sheet to a temperature sufficient for tempering;

a quenching station for rapidly cooling the glass sheet to effect tempering thereof;

conveyor means for moving the glass sheet through said apparatus, at least that portion of said conveyor means in said heating zone and said coating zone being reversible thereby to move the glass sheet first in one direction and then in an opposite direction;

drive means for driving said conveyor means; and

control means for actuating said drive and conveyor means to move the glass sheet into said heating zone for a period to heat the glass sheet to the temperature sufficient for pyrolysis of said material, then into said coating zone for a period to apply to the glass sheet only sufficient of said

material to form the pyrolytic film to a thickness less than said predetermined thickness, thereafter back into said heating zone for a period to heat the glass sheet to a temperature sufficient for pyrolysis of said material, then again into said coating zone for additional application of said material to said glass sheet to increase the thickness of said pyrolytic film to said predetermined thickness, and thereafter sequentially into said station for heating the glass sheet to a temperature sufficient for tempering and into said quenching station.

4,240,817

UREA RESIN FOAM MAT

Iwao Takizawa, Shiraoka; Iwao Otsubo, Tokyo, and Toru Shimizu, Shiraoka, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,198
Claims priority, application Japan, Dec. 27, 1975, 50/156504
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—29 **6 Claims**

1. Urea resin foam mat which contains water absorbable and non-phytotoxic amounts of alkylene glycols and inorganic salts.

4,240,818

PROCEDURE FOR PREPARING NITROGEN-POTASSIUM FERTILIZER

Igor D. Sokolov, Zanevsky prospekt, 32, kv. 200; Jury S. Safrygin, ulitsa Dekabristov, 29, kv. 36; Alexandr V. Muraviev, prospekt Kima, 4, kv. 210, and Nina K. Andreeva, 2 Komosomolskaya ulitsa, 57, korpus 1, kv. 22, all of Leningrad, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,747
Int. Cl.³ C05C *1/00, 5/02*
U.S. Cl. 71—59 **9 Claims**

1. A process for preparing a nitrogen-potassium fertilizer, comprising:

reacting in an aqueous medium, potassium hydrogen sulfate with a nitrate selected from the group consisting of calcium nitrate, barium nitrate, and strontium nitrate, in accordance with the following equation:

$$xK_2SO_4 \cdot yH_2SO_4 + (x+y)Me(NO_3)_2 \xrightarrow{H_2O} 2x\,KNO_3 + 2y\,HNO_3 + (x+y)MeSO_4 \downarrow$$

where Me is Ca, Sr, Ba;

treating the resulting reaction mass with ammonia to neutralize the nitric acid in accordance with the equation:

$$HNO_3 + NH_3 \xrightarrow{H_2O} NH_4NO_3;$$ and

separating the slightly soluble sulfate from the product containing the nitrogen-potassium fertilizer.

4,240,819

METHOD FOR THE INHIBITION OF PLANT GROWTH

Charles D. Fritz, Hatfield, Pa.; Wilbur F. Evans, Kuala Lumpur, Malaysia, and Anson R. Cooke, Hatfield, Pa., assignors to Union Carbide Agricultural Products, Inc., Ambler, Pa.

Division of Ser. No. 869,386, Oct. 24, 1969, which is a continuation-in-part of Ser. No. 693,698, Dec. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 617,860, Feb. 23, 1967, abandoned. This application Jan. 28, 1972, Ser. No. 221,803
Int. Cl.³ A01N *57/20*
U.S. Cl. 71—76 **1 Claim**

1. A method for the inhibition of plant growth which comprises applying thereto an effective amount of 2-chloroethylphosphonic acid.

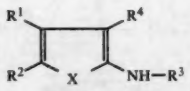
4,240,820

METHOD OF REGULATING THE GROWTH OF PLANTS

Karlfried Dickore, Leverkusen, and Klaus Lürssen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,969
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817449
Int. Cl.³ A01N *43/08, 43/10*
U.S. Cl. 71—76 **28 Claims**

1. Method for regulating the growth of plants which method comprises applying to the plants or their habitat, effective amounts of a heterocyclic compound of the formula


(I)

in which

R^1 is alkyl of up to 6 carbon atoms, aryl of 6 on 10 carbon atoms or substituted aryl carrying at least one substituent selected from halogen, alkyl of up to 4 carbon atoms, haloalkyl of to 4 carbon atoms, alkoxy of up to 4 carbon atoms, alkylthio of up to 4 carbon atoms, alkylsulfonyl of up 4 carbon atoms and nitro;

R^2 is hydrogen, alkyl of up to 6 carbon atoms, aryl of 6 or 10 carbon atoms, or substituted aryl having at least one substituent selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms and nitro,

R^3 is hydrogen or the radical

in which

Y is oxygen and

R^5 is alkyl with 1 to 6 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxyalkyl with 1 to 4 carbon atoms in the alkyl part and 1 to 4 carbon atoms in the alkoxy part, aryloxyalkyl, which has 6 or 10 carbon atoms in the aryloxy part and 1 to 4 carbon atoms in the alkyl part and optionally carrying one or more substituents on the aryloxy part selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms; alkoxy with 1 to 4 carbon atoms; aryl with 6 or 10 carbon atoms, substituted aryl carrying one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms or haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy, alkylthio, and alkylsulphonyl with 1 to 4 carbon atoms and nitro; aryloxy with 6 or 10 carbon atoms substituted aryloxy having at least one substituent selected from halogen, alkyl with 1 to 4 carbon atom, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy, alkylthio, alkylsulphonyl with 1 to 4 carbon atoms and nitro; monoalkylamino with 1 to 4 carbon atoms; dialkylamino with 1 to 4 carbon atoms in each alkyl group; alkenylamino with up to 4 carbon atoms; dialkenylamino with up to 4 carbon atoms in each alkenyl group; arylamino with 6 or 10 carbon atoms substituted arylamino carrying one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms,

alkylthio with 1 to 4 carbon atoms, alkylsulphonyl with 1 to 4 carbon atoms and nitro

R^4 is cyano or the grouping -COR^8 in which R^8 is alkoxy or amino, and

X is oxygen or sulfur.

4,240,821

BIOCIDALLY-ACTIVE 1,3-BENZODITHIOLE-2-THIONE COMPOUNDS

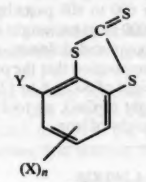
Khalid Rasheed, Weslaco, and James D. Warkentin, McAllen, both of Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 821,977, Aug. 4, 1977, Pat. No. 4,187,096, which is a continuation-in-part of Ser. No. 618,255, Sep. 30, 1975, Pat. No. 4,084,954. This application Nov. 8, 1979, Ser. No. 92,464

Int. Cl.³ A01N *43/28;* **A61K** *31/385;* **C07D** *409/02*

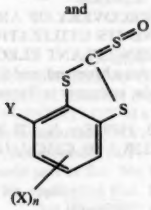
U.S. Cl. 71—90 **31 Claims**

1. A compound selected from the group consisting of those of the formulae:



I

and



II

wherein Y is selected from nitro and trifluoromethyl; X is selected from alkyl and alkenyl of up to 6 carbon atoms, nitro, trichloromethyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulfoxyl, trifluoromethylsulfonyl, methoxymethyl, cyano, carboxy, halogen (F, Cl, Br, I), hydroxy, acetylamino, amino, N-phenylamino, N,N-diallylamino, alkoxy, N-morpholino, N-piperidino, N-piperazino, N-pyrrolidino, dimethylaminodithiocarbamyl, carboalkoxy, alkylthio, mono- and dialkylamino, N-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfoxy, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms; n is an integer from 1 to 3 wherein at least one of said X groups is selected from N-morpholino, N-piperidino, N-piperazino or N-pyrrolidino; and salts thereof.

4,240,822

METHOD FOR CONTROLLING UNDESIRABLE PLANTS USING 1H-BENZOTRIAZOLE AND 2H-BENZOTRIAZOLE COMPOUNDS

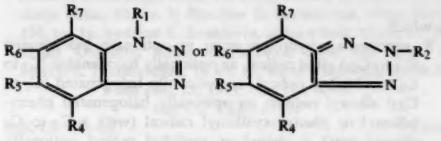
Robert E. Diehl, Lawrenceville, N.J., and Roger V. Kendall, New Haven, Vt., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 760,601, Jan. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 645,064, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 490,422, Jul. 22, 1974, abandoned. This application Dec. 4, 1978, Ser. No. 965,763

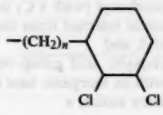
Int. Cl.³ A01N *43/64*

U.S. Cl. 71—92 **15 Claims**

1. A method for the control of undesirable plant species comprising; applying to undesirable plants or soil containing seeds, a herbicidally effective amount of a compound having the formula:



wherein R_1 is secondary alkyl C_3–C_7; benzyl; cyclohexenyl; alkoxy C_3–C_4; acetyl; chloroacetyl; 2-butan-3-one; isobutyryl; t-butyl; methoxymethylpropyl; 2-cyclohexyl-1-one;

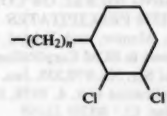


where n is 0 or 1; or —$(CH_2)_n$ -cycloalkyl C_3–C_8 optionally substituted with hydroxy, alkoxy C_1–C_3, alkyl C_1–C_3, or

where R is hydrogen or C_1–C_2 alkyl and n is 0 or 1;

R_2 is secondary alkyl C_3–C_7; benzyl; cycloalkenyl C_3–C_8; —$(CH_2)_n$-cycloalkyl (C_3–C_8) optionally substituted with hydroxy, alkoxy C_1–C_3, alkyl C_1–C_3 or

where R is hydrogen or C_1–C_2 alkyl and n is 0 or 1; 2-cyclohexyl-1-one or



where n is 0 or 1;

R_4 represents, chloro, isothiacyano, cyano, methoxy or nitro; R_5 and R_6 and R_7 are each hydrogen wherein said compound is applied at the rate of from about 0.25 lb./acre to about 4.0 lbs./acre.

4,240,823

NEW PLANT GROWTH REGULATING COMPOSITIONS WHICH CONTAIN DERIVATIVES OF N-ACYL METHIONINE

Claude Clapot, Oullins; Jean Vial, Dardilly; Jacqueline Mourier, Lyons, and Jean C. Boch, Neris les Bains, all of France, assignors to Philagro S.A., Lyons, France

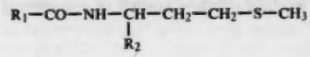
Filed Mar. 1, 1977, Ser. No. 773,278

Claims priority, application France, Mar. 24, 1976, 76 09242

Int. Cl.³ A01N *43/08, 43/40, 37/34, 31/04*

U.S. Cl. 71—98 **15 Claims**

13. A process for modifying the growth of plants comprising applying to said plants a growth-modifying-effective amount of a plant growth-regulating compound of the formula



in which:

R_1 represents a hydrogen atom, an optionally halogenated (C_1 to C_{20}) alkyl radical, an optionally halogenated (C_3 to C_6) cycloalkyl radical, an optionally halogenated (C_2 to C_{20}) alkenyl radical, an optionally halogenated phenylalkenyl or phenyloxyalkenyl radical (with a C_2 to C_4 alkenyl part), a phenyl or naphthyl radical optionally substituted by one or more identical or different atoms or radicals from amongst halogen atoms, (C_1 to C_4) alkyl radicals, trifluoromethyl, nitro, cyano, m-trifluoromethylbenzoyl and o-, m-, or p-fluorobenzoyl substituted amino, hydroxyl, alkoxy (with a C_1 to C_4 alkyl part), aminosulphonyl or alkoxycarbonyl (with a C_1 to C_4 alkyl part), or a heterocyclic radical selected from the group consisting of furyl and pyridyl, and

R_2 represents a carboxylic acid group or a salt which this group can form with an inorganic base or with a primary, secondary or tertiary amine, a

group, in which R_3 is a (C_1 to C_4) alkyl radical optionally substituted by one or more hydroxyl groups, a —CN group or a

group in which R_4 and R_5, which may be identical or different, represent a hydrogen atom or a (C_1 to C_4) alkyl radical.

4,240,824

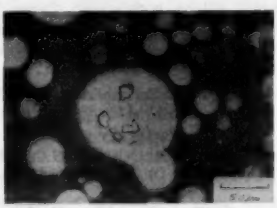
PROCESS OF MAKING NICKEL OR COBALT POWDER WITH PRECIPITATES

Larry N. Moskowitz, Mentor, and Erhard Klar, Beachwood, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 870,339, Jan. 18, 1978, Pat. No. 4,192,672. This application Oct. 4, 1979, Ser. No. 81,875

Int. Cl.³ B22D *23/08*

U.S. Cl. 75—0.5 C **9 Claims**



1. A process for making a boron-containing nickel or cobalt spray-and-fuse, self-fluxing alloy powder which comprises:

(a) forming a melt of boron- and chromium-containing nickel or cobalt alloy;

(b) cooling said melt so that precipitates of chromium carbide and/or chromium boride result in the alloy powder product, at least about 5% of said precipitates by volume of said powder having a particle size of at least about 10 microns;

(c) finely dividing said melt into alloy powder.

4,240,825

METALLOTHERMAL PROCESS FOR THE SIMULTANEOUS PRODUCTION OF MAGNESIUM AND CEMENT OR CALCIUM AND CEMENT

Istvan Tamas, Budapest, Hungary, assignor to Vasipari Kutato Intezet, Budapest, Hungary

Filed Aug. 8, 1979, Ser. No. 65,329

Int. Cl.³ C22B *45/00*

U.S. Cl. 75—67 R **10 Claims**

1. A process for the simultaneous production of magnesium and cement from calcined dolomite or calcium and cement from calcined lime, comprising reducing calcined dolomite or calcined lime under a pressure lower than 10 torr and at a temperature of 1300° to 1600° C. with a reducing agent containing silicon and aluminum in a Si:Al weight ratio of 4:1 to 1:1, wherein the total amount of silicon and aluminum comprises 50 to 100% by weight, using 100 to 200 parts by weight of said reducing agent for 600 to 800 parts by weight of calcined dolomite or 700 to 1000 parts by weight of calcined lime, and using the reducing agent and dolomite or lime in such proportions and of such composition that the produced cement contains 20 to 25% by weight of SiO_2, 6 to 12% by weight of Al_2O_3, 62 to 69% by weight of CaO, up to 2% by weight of MgO and up to 6% by weight of iron.

4,240,826

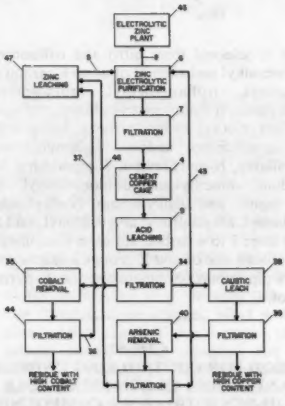
PROCESS FOR THE RECOVERY OF ARSENIC AS A ZINC ARSENATE AND ITS UTILIZATION IN THE PURIFICATION OF ZINC PLANT ELECTROLYTES

Kayo Kangas, Connaught; John Mouland, and Stan Timler, both of Timmins, all of Canada, assignors to Texasgulf Inc., Stamford, Conn.

Filed Sep. 13, 1979, Ser. No. 75,081

Int. Cl.³ C22B *3/00*; C25C *1/14*

U.S. Cl. 75—109 **52 Claims**



1. A process for purifying impure zinc electrolyte containing copper, cadmium, and cobalt impurities, to provide zinc electrolyte suitable for electrolytic deposition processes comprising treating impure zinc electrolyte with zinc dust and arsenic wherein all of said arsenic is provided by zinc arsenate or a portion of the arsenic is provided by zinc arsenate and a portion of the arsenic is provided by a second arsenic source; to provide jarosite leaching with an alternative source of sodium ions and to provide a cement copper cake precipitate containing substantially all of the copper, and a filtrate comprising

purified electrolyte solution suitable for electrolytic deposition; wherein said zinc arsenate is obtained by:

(a) subjecting said copper containing precipitate to an acid leach to provide an acid leach filtrate and an acid leach residue;

(b) subjecting said acid leach residue to a caustic leach to provide a copper enriched residue and a caustic leach filtrate;

(c) treating said caustic leach filtrate with zinc to provide a residue containing said zinc arsenate.

4,240,827

NONMAGNETIC ALLOY STEEL HAVING IMPROVED MACHINABILITY

Kenji Aihara, and Masashi Takahashi, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

Filed Dec. 11, 1978, Ser. No. 968,038
Claims priority, application Japan, Dec. 12, 1977, 52/149758
Int. Cl.³ C22C *39/30*
U.S. Cl. 75—123 AA **4 Claims**

1. A non-nickel containing nonmagnetic alloy steel having improved machinability consisting essentially of by weight not more than 1.5% C, 0.1 to 1.5% Si, 5 to 30% Mn, 0.005 to 0.5% N and at least one member selected from the group consisting of 0.05 to 1.0% S, 0.05 to 1.0% Pb, 0.05 to 1.0% Se, 0.01 to 0.5% Te and 0.001 to 0.05% Ca, the balance being Fe and incidental impurities, and wherein $100/9(C\ \%+N\ \%)+2(Mn\ \%)\geqq 25\%$.

4,240,828

METHOD FOR MINIMIZING THE FORMATION OF A METAL-CERAMIC LAYER DURING CASTING OF SUPERALLOY MATERIALS

Irvin C. Huseby, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 847,778, Nov. 2, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,285
Int. Cl.³ C22C *19/00*
U.S. Cl. 75—135 **7 Claims**

1. A method for minimizing the formation of a reaction layer at the metal-ceramic interface when casting and directionally solidifying a superalloy material comprising the process steps of:

(a) preparing a melt of a superalloy material;

(b) adding a rare earth metal which is one selected from the group consisting of Y, Sm, Nd, Gd, Dy, Er and Yb as a dopant material to the superalloy material;

(c) casting the doped superalloy material in contact with a ceramic oxide material whose metal cation is the same rare earth metal present as a dopant material in the superalloy material, the ceramic material containing less than 1 percent by weight silica, and

(d) solidifying the cast metal while the metal is still in contact with the ceramic oxide material.

4,240,829

ALUMINUM-BASE ALLOY USED AS MATERIAL FOR GALVANIC PROTECTOR

Evgeny G. Lukin, ulitsa Dzhandosova, 69, kv. 123; Jury D. Dunaev, ulitsa Bagrationa, 15, kv. 2; Leonid F. Kozin, Sovetskaya ulitsa, 64, kv. 5; Raushan G. Sarmurzina, ulitsa Mira, 158, kv. 16; Svetlana E. Kozhirova, ulitsa 6 linia, 183-a, kv. 16; Ergali Ospanov, ulitsa Kotelnikova, 32-a, and Irina F. Silukova, 7 mikroraion, 16 kv. 16, all of Alma-Ata, U.S.S.R.

Filed Jan. 25, 1979, Ser. No. 6,963
Int. Cl.³ C22C *21/06*
U.S. Cl. 75—147 **1 Claim**

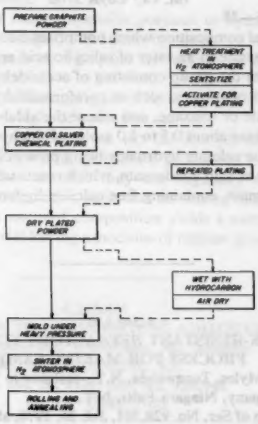
1. An electrochemically active aluminum base alloy consisting essentially of about 0.1 to 3.5 weight percent gallium, about 0.1 to 1.0 weight percent magnesium and the balance essentially aluminum.

4,240,830

METHOD FOR MAKING SINTERED METAL-COATED GRAPHITE FOR HIGH-CURRENT COLLECTOR BRUSHES

Pang K. Lee, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,014
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—212 **9 Claims**



1. A method of making an electrical contact brush comprising:

preparing a quantity of graphite powder;

heating said graphite powder in a hydrogen atmosphere to clean said powder;

mixing the cleaned powder in a plating solution containing a metal selected from the group consisting of copper and silver to plate each grain of powder with a metal coating;

drying the plated powder by heating in a hydrogen atmosphere;

wetting the dried plated powder with hydrocarbons;

molding the hydrocarbon wetted, plated powder to a desired shape under heavy pressure; and

sintering the molded powder in an atmosphere of hydrogen.

4,240,831

CORROSION-RESISTANT POWDER-METALLURGY STAINLESS STEEL POWDERS AND COMPACTS THEREFROM

David H. Ro, Cleveland Heights; Erhard Klar, Beachwood, and Charles I. Whitman, Bay Village, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,956
Int. Cl.[3] B22F *3/00*
U.S. Cl. 75—228 5 Claims

1. In a process for atomizing a melt of metals for producing stainless steel powder, wherein said atomizing is conducted in an oxidizing environment whereby the resulting stainless steel powder is surface-enriched in silicon oxides, the improvement for increasing the corrosion resistance of said powder or a compact thereof which comprises:

adding an effective proportion of modifier metal to said melt prior to said atomization, said modifier metal selected from the group consisting of aluminum, lead, zinc, magnesium, rare earth metals and like metals capable of enrichment about the surface of said resulting atomized stainless steel powder and effective under reductive sintering conditions in the depletion of said silicon oxides about said surface.

4,240,832

DENTAL PULP CAPPING AND CAVITY LINING COMPOSITION AND PREPARATIVE METHOD

Emil Jandourek, Livonia, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,389
Int. Cl.[3] C09K *3/00*
U.S. Cl. 106—35 13 Claims

1. A dental composition which comprises calcium hydroxide and a condensate of an ester of salicylic acid and an aldehyde selected from the group consisting of acetaldehyde, formaldehyde and its oligomers, such as paraformaldehyde and metaformaldehyde or trioxane, and where the aldehyde to salicylate ratio is from about 0.5 to 1.0 moles of aldehyde per mole of salicylate, the calcium hydroxide being present in stoichiometric excess over said condensate, which reacts with it to form a hard, rigid mass, containing free calcium hydroxide dispersed therein.

4,240,833

SHRINK-RESISTANT REFRACTORY FIBER AND PROCESS FOR MAKING SAME

Thomas A. Myles, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 928,201, Jul. 26, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,606
Int. Cl.[3] C03C *3/22;* C04B *35/14, 35/44;* C03C *13/00*
U.S. Cl. 106—39.6 11 Claims

1. A shrink resistant flexible ceramic fiber comprising a microcrystalline combination of alumina and silica manufactured by forming amorphous fibers from a melt containing from about 40 to about 65 weight percent alumina and from about 35 to about 60 weight percent silica followed by heating the fibers to a sufficient temperature for a sufficient time to form microcrystals and cooling the fibers below the crystallization temperature before macrocrystals form, said melt being essentially free from alkali and alkaline earth metal oxides and oxides of boron, lead, copper and zinc; the ceramic fiber being capable of being exposed to a temperature of 1425° C. for 24 hours with a linear shrinkage of less than 2 percent.

4,240,834

SYNTHETIC SINGLE CRYSTAL FOR ALEXANDRITE GEM

Hisashi Machida, and Yoichiro Yoshihara, both of Otsu, Japan, assignors to Kyoto Ceramic Co., Ltd., Kyoto, Japan

Filed Sep. 14, 1979, Ser. No. 75,719
Int. Cl.[3] C04B *35/44*
U.S. Cl. 106—42 5 Claims

1. A synthetic chrysoberyl single crystal for an alexandrite gem, which consists essentially of aluminum oxide and beryllium oxide as the main components, and chromium and vanadium as the coloring components which produce the hue and color change characteristic of an alexandrite gem, wherein the chromium is present in an amount of about 0.00006 to 3.45% by weight based on the weight of the crystal, and the vanadium is present in an amount of about 0.00075 to about 2.95% by weight based on the crystal.

4,240,835

METHOD OF MAKING A SHAPED SILICON CARBIDE-SILICON MATRIX COMPOSITE AND ARTICLES MADE THEREBY

William Laskow, Downingtown, Pa., and Charles R. Morelock, Ballston Spa, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 946,718, Sep. 28, 1978, abandoned, which is a division of Ser. No. 572,969, Apr. 30, 1975, Pat. No. 4,141,948, which is a continuation-in-part of Ser. No. 354,106, Apr. 24, 1973, abandoned. This application Dec. 5, 1979, Ser. No. 100,579
Int. Cl.[3] C04B *35/56*
U.S. Cl. 106—44 12 Claims

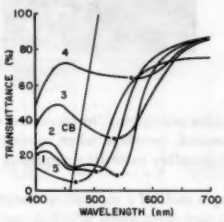
1. A shaped ceramic consisting essentially of axially aligned silicon carbide crystals in a silicon metal matrix having from about 4% by weight to about 30% by weight of carbon in a chemically combined form or as a mixture of chemically combined carbon and elemental carbon, said shaped ceramic exhibiting a density of about 2.3 to 3.0 grams/cc, a permanent elastic strain when measured at about 1000° C. of from about 0% to about 6%, and an elastic modulus of from about 30×10^6 psi to 60×10^6 psi.

4,240,836

COLORED PHOTOCHROMIC GLASSES AND METHOD

Nicholas F. Borrelli, Elmira, and Brent M. Wedding, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,435
Int. Cl.[3] C03C *3/08, 3/20, 3/26*
U.S. Cl. 106—47 Q 12 Claims



1. A colored silver halide-containing photochromic glass article exhibiting a surface coloration produced by the heat treatment of the photochromic glass article under flowing gaseous reducing conditions at a heat treatment temperature not exceeding about 450° C., said colored photochromic glass article exhibiting, in at least one cross-sectional dimension in the undarkened state, a spectral transmittance curve comprising at least one treatment-induced absorption peak having a

peak location to the right of the line CB of FIG. 1 of the drawing.

4,240,837

CADMIUM GLASS HAVING LOW CADMIUM OXIDE SOLUBILITY

Werner F. Votava, Broadview Heights, and Thomas W. Wonnacott, Chagrin Falls, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 926,721, Jul. 21, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,659

Int. Cl.³ C03C *3/12, 3/04*

U.S. Cl. 106—48 **8 Claims**

1. A cadmium glass having relatively high percentage of cadmium oxide and relatively low cadmium oxide solubility, said glass consisting essentially of in weight percent about:

CdO	42% to 46%
TiO_2	0.0% to 30%
ZrO_2	0.0% to 30%
SiO_2	10% to 60%
Al_2O_3	0.0% to 10%

said glass having a CdO solubility no greater than about 2.0% as determined by using the extraction procedure of the Brimsdown Method.

4,240,838

PIGMENTARY HARDENER-CONTAINING CURABLE SILICATE COMPOSITIONS

John E. Blasko; William G. Boberski, both of Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,269

Int. Cl.³ C09D *1/02, 1/04;* **B05D** *3/02*

U.S. Cl. 106—84 **10 Claims**

1. A curable composition, consisting essentially of:

(a) an aqueous solution or dispersion of an alkali metal or quaternary ammonium silicate;

(b) a cure promoting amount of a latent metal ion containing insolubilizing agent; and

(c) a pigmentary hardener corresponding to the formula

$$M_xM'_yO_z$$

where M is a divalent or trivalent metal ion, M′ is a metal ion from Group III, IV or VIB of the Periodic Table of Elements, provided M and M′ are not the same metal ion, x is 1 or 2, y is 1, 2 or 3 and z is an integer the value of which satisfies the oxidation state of the pigmentary hardener, wherein the amount of the pigmentary hardener ranges from about 1 part to about 300 parts based on 100 parts of the alkali metal or quaternary ammonium silicate solids.

4,240,839

THERMAL INSULATION MATERIAL

Charles E. Crepeau, Centre Square, and Robert F. Mulvey, Malvern, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 28, 1979, Ser. No. 52,702

Int. Cl.³ C04B *11/00*

U.S. Cl. 106—88 **10 Claims**

1. A thermally insulating composite assembly, comprising generally at least one structural surface element and a low density cellular gypsum material positioned adjacent to said surface element, said cellular gypsum material comprising a gypsum matrix having minute cavities homogeneously distributed therein, said gypsum material having a dry density of less than about 3 pounds per cubic foot and a thermal coefficient of less than about 0.37.

4,240,840

CEMENTITIOUS COMPOSITIONS

Stephen B. Downing, High Wycombe; Desmond W. J. Osmond, Windsor; Maurice W. Skinner, Maidenhead; Edmund J. West, and David G. Dawson, both of High Wycombe, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 871,516, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 736,350, Oct. 27, 1976, Pat. No. 4,070,199. This application Apr. 26, 1978, Ser. No. 900,309

Claims priority, application United Kingdom, Oct. 28, 1975, 44369/75; Apr. 27, 1977, 17565/77

Int. Cl.³ C04B *7/353*

U.S. Cl. 106—93 **18 Claims**

1. A homogeneous uncured cementitious composition which comprises the following initial ingredients:

(a) a hydraulic cement selected from the group consisting of cements which comprise compounds of calcium, aluminum, silicon, oxygen and/or sulfur which set and harden by reaction with water,

(b) water,

(c) a water-dispersible polymer, and

(d) a fine aggregate of which 75% by weight passes a sieve of aperture 1 mm;

wherein

(i) the ratio of water to hydraulic cement is in the range 10–28 parts by weight of water to 100 parts hydraulic cement;

(ii) the water-dispersible polymer is selected with reference to the hydraulic cement and to the selected proportions of water, cement and fine aggregate for its suitability to facilitate homogenization and to yield on homogenization a product which can be shaped under pressure and which is shape-retaining;

(iii) the ratio of water-dispersible polymer to hydraulic cement is in the range 0.1–3.0 parts by weight of water-dispersible polymer to 100 parts by weight of hydraulic cement; and

(iv) the amount of fine aggregate (d) is 5% to 75% by weight based on the weight of hydraulic cement;

and wherein the ingredients (a), (b), (c) and (d) have been jointly subjected to a homogenization process of dispersion and homogenization so that they are regularly dispersed throughout the composition such that on curing and drying, the homogeneous uncured composition yields a cured, dried cementitious material having a modulus of rupture greater than 20 MN/m^2.

4,240,841

NO-CARRIER CORRUGATING ADHESIVE

Alphonse J. DiDominicis, Woodridge, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 19, 1978, Ser. No. 926,048

Int. Cl.³ C08L *3/00*

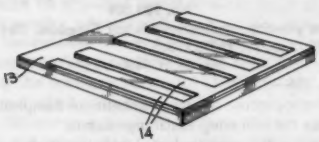
U.S. Cl. 106—211 **2 Claims**

1. In a high-speed, no-carrier corrugating adhesive comprising an alkaline, aqueous dispersion of partially swollen starch material formed by saponification of a starch ester having a degree of substitution of at least about 0.015 and having at least about 30% greater area under an Instron force-time heating curve and at least about 30% greater area under an Instron force-time cooling curve than unmodified starch under the same conditions, wherein the starch material comprises between about 10% to 25% by total weight of adhesive, the improvement comprising an effective amount of flow modifier up to about 4% by starch material weight, wherein said flow modifier comprises lauric acid, for improving the rheological characteristics of said dispersion to provide said adhesive with a Bostwick viscosity of less than about 75 seconds to 15 centimeters.

4,240,842
SOLAR CELL HAVING CONTACTS AND ANTIREFLECTIVE COATING

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 3,945, Jan. 16, 1979. This application Mar. 28, 1979, Ser. No. 24,784
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—256 6 Claims

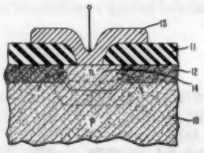


1. A photovoltaic cell having a front surface adapted to receive light impinging thereon, an antireflective coating overlying and adhered to a major portion of said surface, and an electrical contact in the form of a pattern covering a minor portion of said surface and said coating, said contact having relatively small portions thereof extending through said coating and being in electrical contact with spaced portions of said light-receiving surface of said cell, said antireflective coating other than that part covered by said contact being continuous and uninterrupted.

4,240,843
FORMING SELF-GUARDED P-N JUNCTIONS BY EPITAXIAL REGROWTH OF AMORPHOUS REGIONS USING SELECTIVE RADIATION ANNEALING

George K. Celler, Lawrenceville, and Gabriel L. Miller, Westfield, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1978, Ser. No. 908,792
Int. Cl.[3] H01L *21/263, 21/26*
U.S. Cl. 148—1.5 5 Claims

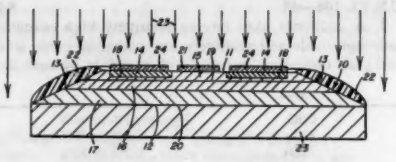


1. A method for making a semiconductor device comprising: implanting ions of one conductivity type into the surface of a single crystal semiconductor substrate of the opposite conductivity type to form an ion implanted layer of essentially amorphous semiconductor overlying a substrate of essentially single crystal semiconductor, exposing a selected region of the amorphous ion implanted layer to laser radiation, the surface of said selected region being smaller than, and wholly within, the surface of the layer, the exposure to radiation being sufficient to regrow said selected region of the amorphous ion implanted layer epitaxially on the single crystal substrate thereby transforming the region to single crystal material, and forming a p-n junction with the periphery of the p-n junction in contact with the amorphous region.

4,240,844
REDUCING THE SWITCHING TIME OF SEMICONDUCTOR DEVICES BY NEUTRON IRRADIATION

Patrick E. Felice, Hempfield Township, Westmoreland County; John Bartko, Monroeville; Krishan S. Tarneja, and Chang K. Chu, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1978, Ser. No. 972,302
Int. Cl.[2] H01L *21/263, 21/26*
U.S. Cl. 148—1.5 17 Claims



1. A method of changing the switching time and recovery charge of certain semiconductor devices comprising the steps of:

A. positioning a semiconductor device containing at least one PN junction to be exposed to a neutron radiation source of greater than 1.0 Mev.;

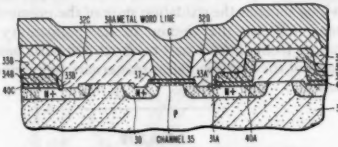
B. thereafter irradiating the semiconductor device with the neutron radiation source of greater than 1.0 Mev. to a dosage between 1×10^{11} and 1×10^{15} neutrons per square centimeter;

C. annealing the semiconductor device at a temperature at least as high as the highest specified temperature for storage and use.

4,240,845
METHOD OF FABRICATING RANDOM ACCESS MEMORY DEVICE

Ronald P. Esch, San Jose, Calif.; Robert M. Folsom, Reston, Va.; Cheng-Yih Liu, Woodbridge, Va.; Vincent L. Rideout, Mohegan Lake, N.Y.; Donald A. Soderman, Vienna, Va., and George T. Wenning, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 850,762, Nov. 11, 1977. This application Feb. 4, 1980, Ser. No. 118,257
Int. Cl.[3] H01L *21/26, 21/223*
U.S. Cl. 148—1.5 6 Claims



1. A method of fabricating a read/write memory array on a silicon substrate of a first conductivity type having at least one planar surface, said method comprising the following steps:

(a) forming a first layer of oxide on said planar surface of said silicon substrate;

(b) opening first and second spaced apart windows in said oxide layer to expose first and second regions on said planar surface of said silicon substrate;

(c) introduce impurities of a second conductivity type through said first and second windows into said first and second regions of said silicon substrate;

(d) forming a second layer of oxide on the exposed surface of the structure;

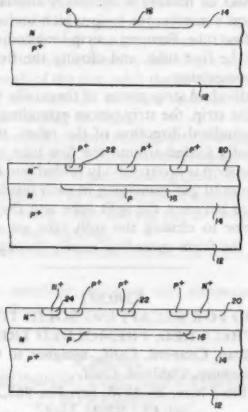
(e) forming a layer of phosphosilicate glass (PSG) on said oxide layer;
(f) opening a third window in the PSG layer and said oxide layer to expose at least a portion of said second region of said second conductivity type;
(g) forming a thin oxide layer on the exposed surface of said second region;
(h) depositing a polysilicon layer on the exposed surface of said structure;
(i) introducing impurities of a second conductivity type into said polysilicon layer;
(j) removing a portion of the doped polysilicon layer to expose a portion of said region;
(k) forming a relatively thick oxide layer on the exposed surface of said structure;
(l) opening a fourth window in said relatively thick oxide layer to expose an area on said substrate surface extending from said first region to said second region;
(m) forming a thin oxide layer on the area of said substrate exposed by said fourth window; and
(n) depositing a conductive metal on said thin oxide layer lying on said area exposed by said fourth window.

4,240,846

METHOD OF FABRICATING UP DIFFUSED SUBSTRATE FED LOGIC UTILIZING A TWO-STEP EPITAXIAL DEPOSITION

Brent R. Doyle, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 27, 1978, Ser. No. 919,632
Int. Cl.[2] H01L *21/20, 27/02*
U.S. Cl. 148—175 **12 Claims**



1. A method of fabricating a substrate fed logic semiconductor structure having an injector and complementary transistor comprising:
epitaxially forming a first N conductivity type layer on a P conductivity type substrate having a lower impurity concentration than said substrate;
depositing P conductivity type impurities at the surface of said first layer having an impurity concentration less than said first layer;
epitaxially forming a second N conductivity type layer on said first layer having an impurity concentration less than the impurity concentration of said first layer and deposited P conductivity type impurities;
depositing P conductivity type impurities in the surface of said second layer having a greater impurity concentration than said P conductivity type impurities at the surface of said first layer; and
simultaneously diffusing said P conductivity type impurities up from the surface of said first layer into said second layer and P conductivity type impurities down from the surface of said second layer to form a buried P conductivity type region between said two layers and a P conductivity type region extending from the surface of said second layer down to said buried region;
said substrate, first layer and buried region forming the emitter, base and collector of the injector transistor, respectively and said first layer, buried region and second layer form the emitter, base and collector of the complementary transistor, respectively.

4,240,847

PRODUCTION OF PLATINUM GROUP METAL LAYER ON A REFRACTORY

Max G. Chrisman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 862,996, Dec. 21, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,049
Int. Cl.[3] B05D *3/02*
U.S. Cl. 156—62.2 **2 Claims**

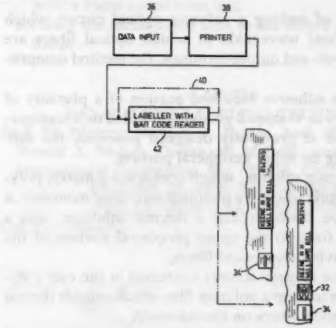
1. A process comprising heating an article comprised of a particulate layer of a small particle size alloy composition consisting essentially of platinum and rhodium disposed intermediate a refractory substrate and a sheet of platinum group metal or an alloy thereof so as to bond said sheet to said substrate, said small particle size alloy composition being produced by a process which comprises substantially quantitatively reducing platinum and rhodium complexes in an aqueous solution and precipitating the elemental form of said alloy composition therefrom as a solid, small particle size form thereof and drying said precipitate without sinterization.

4,240,848

SYSTEM FOR ALPHABETICALLY LABELLING ARTICLES

Donald T. Barber, Willowdale, Canada, assignor to Datafile Limited, Willowdale, Canada

Filed Jul. 5, 1978, Ser. No. 922,187
Int. Cl.[3] B32B *31/10*; B65C *1/04*; G09F *3/02*
U.S. Cl. 156—64 **5 Claims**



1. A process for labelling a system of file folders comprising printing labels for the system where each printed label is different from other printed labels, each label having first and second fields extending its length and printed in a first field a first set of indicia and printed in a second field a second set of indicia where said second set is printed backwards and upside down relative to the first set, the first and second set of indicia being the same and peculiar to that printed label, in the same operation printing in said first label field a machine readable indicia code representative of a portion of said first set of indicia and oriented for machine reading along label's length, applying such label to a file folder by folding and locating it on a folder flap with said first label field located for application to

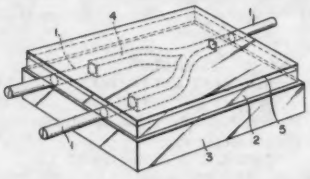
the rear side of such folder flap; each set of indicia having been printed to appear upright in its respective field with said label folded along a fold line between said fields as applied to such folder flap, machine reading such machine readable indicia code on the label and controlling by such reading step a labeller's application to such file folder flap of individual colour coded labels, each colour coded label as applied having an indicium corresponding to one of such coded indicia, said process making all file folders of said system distinguishable from one another by their labelling.

4,240,849

POLYMER OPTICAL CIRCUIT WITH OPTICAL LEAD-FIBERS AND METHOD OF FABRICATING THE SAME

Takashi Kurokawa; Norio Takato; Shigeru Oikawa, and Yuzo Katayama, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,062
Claims priority, application Japan, Jun. 21, 1977, 52/72755
Int. Cl.[3] G02B *5/172*
U.S. Cl. 156—73.2 **8 Claims**



1. A method of making a polymer optical circuit which includes an optical waveguide to which optical fibers are connected as input- and output-terminals, the method comprising:

fixing with an adhesive each end portion of a plurality of optical fibers to V-shaped grooves provided on a transparent substrate at previously designed positions, the substrate having an upper peripheral portion;

casting a polymer solution, which comprises a matrix polymer, an organic solvent, a photopolymerizing monomer, a UV sensitive sensitizer and a thermal inhibitor, into a framework fixed to the upper peripheral portion of the substrate having the optical fibers;

evaporating the organic solvent contained in the cast polymer solution to form a polymer film which embeds therein the fixed optical fibers on the substrate;

placing a glass photomask having a pattern of an optical waveguide on the polymer film so as to align the pattern thereof with positions of the embedded ends of the optical fibers;

irradiating an ultra violet light on the glass photomask so as to form an original figure of an optical polymer waveguide in the polymer film, the waveguide being connected to the ends of the embedded optical fibers; and

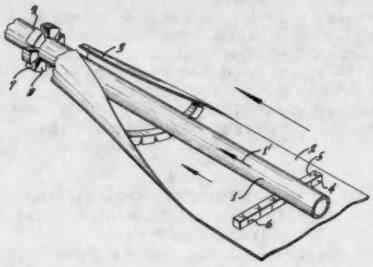
removing the residual monomer contained in the original figure of the optical polymer waveguides by drying the polymer film fixed to the substrate in a vacuum after taking off the glass photomask from the polymer film to form a final optical waveguide contained in the polymer film.

4,240,850

MAKING THERMALLY-INSULATED TUBING

Hans-Joachim Arntz, Wedemark, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke, Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,409
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823101
Int. Cl.[3] B32B *31/06, 5/20;* **B29C** *27/28*
U.S. Cl. 156—78 **3 Claims**



1. A method of making a thermally insulated, concentric tube system on a continuous basis which includes the steps of providing a first tube, forming a strip longitudinally into a split tube around the first tube, and closing the first tube, the improvement comprising:

placing individual strip pieces of thermally insulating material on the strip, the strip pieces extending transversely to the longitudinal direction of the tubes, the pieces being sequentially folded around the first tube to become spacers as the strip is progressively folded into the split tube, at least one axial gap remaining in each resulting spacer; and

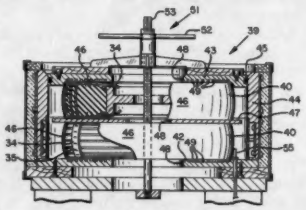
filling space between the split tube and the first tube with foam prior to closing the split tube on account of said folding, the foam spreading axially through the gaps.

4,240,851

METHOD FOR RECAPPING SOLID TIRES WITH PRECURED, PREMOLDED TREAD

Michael J. King, Concord, Calif., assignor to Oliver Tire and Rubber Company, Oakland, Calif.

Filed Nov. 24, 1978, Ser. No. 963,223
Int. Cl.[3] B29H *17/37*
U.S. Cl. 156—96 **8 Claims**



1. A method of retreading a rim-mounted solid tire with a precured, premolded tread strip, comprising:

gripping the solid tire by the rim, with an appropriate adapter;

mounting the solid tire, via the adapter, on a buffing machine and buffing the outer peripheral surface of the tire down concentrically, removing the old tread and continuing to buff the tire down below the base of the old tread;
extracting from the tire carcass metal and other fragments exposed during the buffing process;
repairing cuts and other injuries to the tire carcass, if any, including filling holes with uncured rubber, eliminating substantially all air from the holes;
applying a cement coating to the buffed surface of the tire;
applying a layer of bonding gum, including uncured rubber, to the surface of the tire over the cement coating;
applying a base layer of premolded, precured rubber over the bonding gum, to build up the tire diameter;
adhering a second bonding gum layer to the surface of the base layer;
applying a precured, premolded tread strip over the bonding gum layer;
splicing the tread strip utilizing bonding gum between the ends;
securing the splice together with a temporary securing means;
stitching the tread to the casing;
securing wicking to the built-up tire, extending from sidewall to sidewall over the tread;
applying an envelope over the built-up tire and wicking, extending over the tread and most of each sidewall;
loading the enveloped, built-up tire into a curing module having a generally cylindrical peripheral wall and relatively movable opposed wall portions for pressing against the enveloped sidewalls of the tire;
forming a sealed annular space about the envelope and within the module by urging at least one of the relatively movable opposed wall portions toward the other to engage the tire sidewalls, thereby forming a sealing annulus at each sidewall of the tire, with the envelope and wicking sandwiched between the sidewall and the adjacent wall portion of the curing module;
introducing a heated pressurized gas into the sealed annular space and maintaining it for a predetermined curing time, thereby securing the tread, bonding gum, base layer and tire carcass together by pressing them together and curing the uncured rubber while forcing out air present between the layers via the wicking;
removing the retreaded solid tire from the curing apparatus; and
removing the envelope, wicking and temporary securing means from the retreaded tire.

4,240,852

METHOD OF BONDING URETHANE FORMULATIONS TO RUBBER

Edward N. Gomberg, Hixon, Tenn., and Dana W. Somesla, Riverside, Calif., assignors to Synair Corporation, Chattanooga, Tenn.

Continuation-in-part of Ser. No. 969,632, Dec. 14, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,939
Int. Cl.³ B29H *17/36*
U.S. Cl. 156—96 **5 Claims**

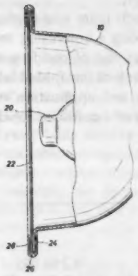
5. A method of recapping a rubber tire with a urethane formulation, comprising the steps of:
(a) buffing down the tire casing surface to remove old tread and cleaning said surface of extraneous materials;
(b) coating the buffed tire casing surface with a liquid cyanoacrylate adhesive to wet said surface with adhesive;
(c) applying an initial liquid or paste coating of an uncured urethane formulation onto said surface while said surface is still wet with the cyanoacrylate adhesive;
(d) placing said tire in a mold having an interior configuration of the desired shape of the recapped portion of the tire;
(e) injecting additional liquid or paste urethane formulation into said mold before the initial urethane has cured and filling the interior cavity of the mold;
(f) removing the recapped tire from the mold as soon as the urethane formulation has set; and
(g) allowing said urethane formulation to cure.

4,240,853

LENS CLOSURE FOR LIGHT FIXTURE AND METHOD FOR ATTACHMENT

Marvin J. Pustka, New Braunfels, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,271
Int. Cl.³ E06B *3/60*; F21V *11/00*; G03B *15/02*
U.S. Cl. 156—108 **10 Claims**



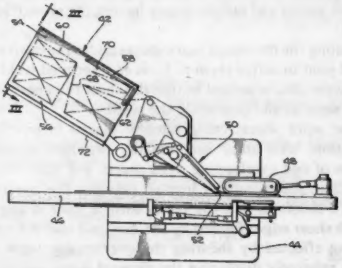
1. An improved method of securing a plastic lens to a lighting fixture of the type which has a housing with nonfront entry means to access the light source, and which includes a radially outward projecting front flange, wherein the improvement comprises:
applying an adhesive means to the outside perimeter of the radially outward projecting flange;
uniting the plastic lens with the adhesive flange;
covering the edge of the united plastic lens and the flange with a metal cored trim; and
securing the metal cored trim to the united plastic lens and flange.

4,240,854

FAN-FOLDED LABELING TECHNIQUE

Jack W. Massey; William P. Belden, both of Glendora, and Ronald A. Mabry, Covina, all of Calif., assignors to Avery International Corporation, San Marino, Calif.

Filed Oct. 31, 1978, Ser. No. 956,374
Int. Cl.³ B31F *5/00*; B65H *69/06*
U.S. Cl. 156—157 **11 Claims**



1. A method for efficiently handling slippery and unstable layers of fan-folded self-adhesive labels mounted on a backing

sheet comprising the steps of:

preparing self-adhesive labels on a backing tape in a fan-folded configuration to form a slippery and unstable stack of layers;

loading stacks of the slippery fan-folded labels on backing tape directly from a fan-folding label fabrication machine into rectangular four sided cassettes open at both the front and the top;

packaging the loaded cassettes to hold the fan-folded labels in the cassettes;

transporting the cassettes to the label applicator location;

mounting first and second stacks of fan-folded labels adjacent one another with the lower end of the backing tape and labels of each fan-folded stack available for splicing;

feeding said labels from the first one of said stacks into a label applicator;

applying said labels from said applicator to products as they are moving along a conveyor; and

splicing the lower end of said first stack to the upper end of said second stack of fan-folded labels without interrupting the dispensing and application of labels from the top of said first stack of fan-folded labels.

4,240,855

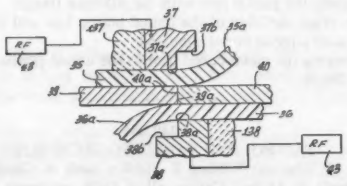
METHOD OF WELDING PLASTIC SHEETS EDGE-TO-EDGE

William Pennington, 317 S. West St., Anaheim, Calif. 92805

Division of Ser. No. 900,529, Apr. 27, 1978, Pat. No. 4,177,100, which is a continuation of Ser. No. 749,828, Dec. 13, 1976, abandoned. This application Aug. 15, 1979, Ser. No. 66,843

Int. Cl.[3] **B29C** *27/04;* **B65H** *69/08*

U.S. Cl. 156—159 **7 Claims**



1. In the method of forming an improved weld between plastic sheets, the steps that involve:

(a) deforming two joint defining work sheets into a volumetric position substantially defined by two undeformed sample sheets positioned in edge-to-edge position, the work sheets and sample sheets having the same thickness, and

(b) heating the deformed work sheets under pressurization at said joint to soften them to form an improved weld therebetween characterized in that the sheet thickness remains the same at and proximate the weld,

(c) the work sheets being initially placed in overlapping relation, with shear dies initially provided at opposite sides of said overlapping work sheets, and with two intermediate plates initially located between the overlapping work sheets so that the plates form a joint in alignment with shear edges formed by the dies, and said deformation being effected by shearing the overlapping work sheets and relatively displacing the sheared work sheets in the directions of their thicknesses into edge-to-edge relation, said shearing and displacement of the sheets being effected by displacing the shear dies relatively toward one another.

4,240,856

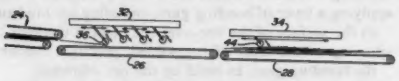
CONTINUOUS RUNNING CORRUGATOR

Robert H. Craemer, and Donald J. Evans, both of Cherry Hill, N.J., assignors to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed May 5, 1978, Ser. No. 903,350

Int. Cl.[2] **B31F** *1/20;* **B65G** *37/00, 43/10*

U.S. Cl. 156—205 **9 Claims**



1. A method of creating a gap in a paperboard web comprising:

(a) producing a continuous paperboard web at a double facer machine,

(b) severing said web transversely when it is desired to effect an order change thereby producing a severed web section,

(c) producing a gap between the leading edge of the severed web and the trailing edge of the web section,

(d) adjusting one or more of a slitter-scorer and the cut-off for the next production order while the same are in said gap,

(e) shingling the sheets cut from said web section on a shingling conveyor operating at a first speed which is substantially below the speed of said double facer machine,

(f) maintaining at least some of said gap on said shingling conveyor between the last sheet cut from said web section and the first sheet cut from the web for the next production order by increasing the conveyor speed of the shingling conveyor to a second conveyor speed substantially higher than said first conveyor speed prior to depositing the last sheet of the web section on said shingling conveyor, using a second conveyor speed which results in a shingling ratio less than two to one, and

(g) decreasing the speed of said shingling conveyor from said second conveyor speed to said first conveyor speed after the first sheet of the new production run is deposited on the shingling conveyor.

4,240,857

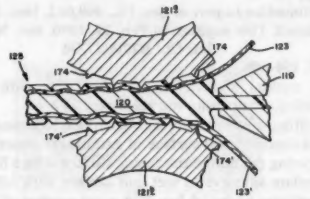
FIBER REINFORCED MULTI-PLY STAMPABLE THERMOPLASTIC SHEET

Michael P. DellaVecchia, Sparta; Joseph E. Mackey, East Hanover, and Albert H. Steinberg, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 816,630, Jul. 18, 1977. This application Aug. 8, 1978, Ser. No. 931,692

Int. Cl.[2] **B31F** *1/00*

U.S. Cl. 156—209 **7 Claims**



1. A process for producing a composite laminated sheet comprising the steps of:

(a) extruding a first sheet layer comprising from about 40 percent to 100 percent of thermoplastic polymer, about 0 percent to 50 percent of a particulate filler and 0 percent to 45 percent short glass fibers having a length ranging

from 0.01 to ¾ of an inch and arranged in a plane generally parallel to the sheet surface;

(b) embossing said first sheet layer in a roll stack to form an embossed surface thereon containing a plurality of projections;

(c) extruding a second sheet layer comprising from about 50 percent to 100 percent of synthetic thermoplastic polymer and from 0 percent to 50 percent particulate filler, but being essentially free of glass fibers;

(d) feeding said first sheet, said second sheet and a long fiber glass mat, the fibers of which have a length of at least 1 inch, into the nip of a set of laminating rolls while the resin of the second sheet is still in a molten condition, the clearance between the rolls being less than the thickness of the sheets and glass mat being fed to the nip of said rolls, whereby the long glass mat is positioned within said second sheet during impregnation of said mat thereby and said first and second sheets are laminated into a smooth multi-ply product.

4,240,858

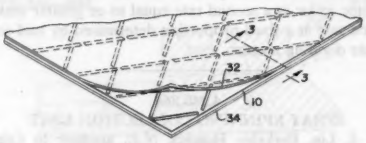
METHOD OF MAKING A HEXAFLEXAGON

Stewart Lamlee, 55 W. 86th St., New York, N.Y. 10024

Continuation of Ser. No. 723,325, Sep. 15, 1976, abandoned. This application May 19, 1978, Ser. No. 907,758

Int. Cl.³ B31F *3/00*

U.S. Cl. 156—211 **8 Claims**



1. A method for making a plurality of hexaflexagons from a single sheet of stock material comprising the steps of:

die cutting the single sheet to form a number of parallel rows of non-intersecting zigzag slots;

adhering a first transparent sheet to one face of said die-cut single sheet to form a sandwich;

cutting said sandwich to intersect said slots and divide said die-cut sheet into a plurality of disconnected strips of discreet individual equilateral triangle portions, said strips being equal in number to the number of parallel rows, said triangle portions being connected to one another solely by said transparent sheet; and

folding each of said strips and connecting the first and last triangles of each of said strips together.

4,240,859

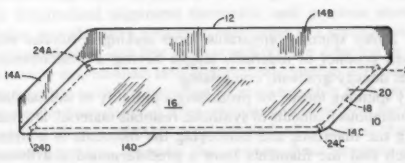
METHOD OF MAKING A WATER BED MATTRESS

Lynn D. Larson, 6501 Park Crest, Lincoln, Nebr. 68506

Filed May 11, 1979, Ser. No. 38,375

Int. Cl.³ B29C *17/04*

U.S. Cl. 156—245 **5 Claims**



1. A method of making a water bed mattress comprising the steps of:

vacuum forming a first sheet plastic material into five sides of a right regular parallelopiped;

cutting said sheet with an edge around its rim;

marking said rim for alignment purposes;

providing a second plastic sheet having heat resistant qualities; and

heat sealing said second plastic sheet to said rim using said alignment markers as guides, whereby a solid plastic right regular parallelopiped is formed with a heat resistant side.

4,240,860

LATEX-BASED ADHESIVES

Ernest G. Pole, Sarnia, Canada, and Roy Clark, Libertyville, Ill., assignors to Polysar Limited, Sarnia, Canada

Filed Apr. 13, 1978, Ser. No. 896,092

Claims priority, application Canada, May 13, 1977, 278372

Int. Cl.² C09J *3/12, 5/04, 5/06*

U.S. Cl. 156—327 **7 Claims**

1. A process for adhering a preformed body which is pervious to water vapour to another preformed body which comprises coating a surface of at least one of said bodies with a substantially solvent-free water-based adhesive composition comprising a rubbery polymer latex stabilized with an emulsifier which forms water-insoluble compounds with zinc and cadmium ions, an ammonium or amine sulfamate gelling agent for the latex, a zinc or cadmium ion donor compound, and sufficient ammonia or ammonia donor compound to provide a pH of above 8 to the adhesive composition, contacting the adhesive coated surface with a surface of the other body, and heating the intersurface layer of adhesive while maintaining the contact between the two bodies to cause gelation of the latex and removal of the water.

5. An adhesively bonded assembly produced by the process of claim 1.

4,240,861

PROCESS FOR THE PREPARATION OF DIHYDROXYPOLYURETHANES AND THE USE THEREOF AS ADHESIVES OR AS RAW MATERIALS FOR ADHESIVES

Walter Meckel, Neuss; Horst Müller-Albrecht, Cologne; Manfred Dollhausen, Odenthal, and Eugen Velker, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 925,582, Jul. 17, 1978, abandoned. This application May 17, 1979, Ser. No. 39,702

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734102

Int. Cl.³ C08G *18/34*

U.S. Cl. 156—331 **30 Claims**

1. In a process for bonding rubber to rubber or to other materials by coating the surfaces to be bonded with an adhesive and joining them together, the improvement wherein said adhesive is a predominately linear dihydroxypolyurethane containing from 0.01 to 1.0%, by weight, of carboxyl groups and from 0.1 to 10 milliequivalent of ionic groups per 100 g of polyurethane.

4,240,862

PRINTING SYSTEM FOR BOARDING PASS AND/OR BAGGAGE TAG

Kiyoshige Ishiyama, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 922,828

Claims priority, application Japan, Jul. 20, 1977, 52-87520; Jul. 21, 1977, 52-88002

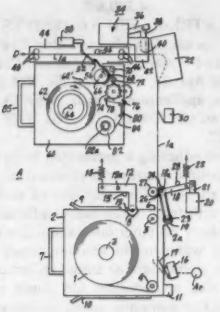
Int. Cl.³ G07B *1/00*

U.S. Cl. 156—350 **23 Claims**

1. A printing system for a boarding pass and/or baggage tag comprising:

control means for providing instructions for printing passenger-related information;

a housing;
a printing unit contained in said housing and controlled with said control means comprising:
a roll of printing paper strip;
feeding means for drawing out said printing paper strip from said roll and advancing it within said housing;
guide means for guiding said advancing printing paper strip;
dotting printer means for printing passenger-related characters on said advancing printing paper strip in accordance with said instructions from said control means;



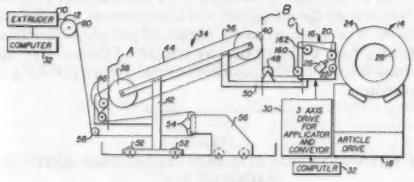
cutting means for cutting said advancing printing paper strip after being printed; and
ejecting means for ejecting said printed and cut printing paper strip from said housing;
and wherein said control means comprises pattern generator means for memorizing passenger-related characters; and
said dotting printer means comprises a thermal printing apparatus which comprises a plurality of thermal elements arranged in a line opposite the top surface of said printing paper strip and controlled by output signals from said pattern generator means.

4,240,863

CONTROL SYSTEM FOR AN ELASTOMER EXTRUSION AND APPLICATOR APPARATUS

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 12, 1979, Ser. No. 29,246
Int. Cl.³ B29H *17/37*
U.S. Cl. 156—361 **17 Claims**



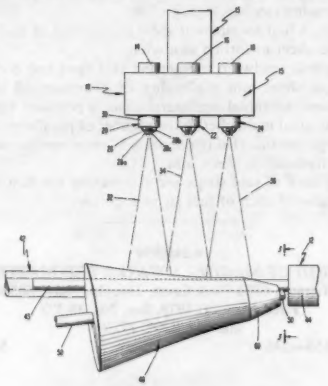
1. In a control system for an elastomer extrusion and application apparatus including:
means for receiving a continuous, moving extruded elastomeric ribbon and for providing a signal representing the rate of ribbon receipt;
a first rate dividing means receiving said ribbon receipt signal;
ribbon moving means receiving said ribbon from said receiving means for advancing the ribbon along a variable path of fixed length;
means connected to said ribbon moving means for providing a signal representing the rate of ribbon movement along said path;
a first servo system including said first rate dividing means for receiving said ribbon movement signal to operate said ribbon moving means so as to cause the ribbon to be moved in said ribbon path at a first rate higher than said rate of ribbon receipt at a fixed proportion determined by said first rate dividing means;
means for moving an article to have the ribbon applied thereto in a predetermined article path at the end of said ribbon path; and
an applicator at the end of said ribbon path for receiving the ribbon from the ribbon moving means and for applying the ribbon to an article moving in said article path and including a rotary applicator roller;
the improvement comprising:
a resolver connected to said applicator roller for providing a signal representing the rate of rotation of said roller and thus the rate of ribbon application;
a second rate dividing means receiving said ribbon receipt signal;
a second servo system including said second rate dividing means for receiving said rate of rotation signal to operate said article moving means so as to cause the article to be moved in said article path to draw ribbon off of said applicator roller at a second rate equal to or greater than said first rate at a fixed proportion determined by said second rate dividing means.

4,240,864

SPRAY SPINNING COLLECTION UNIT

Victor J. Lin, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,695
Int. Cl.³ D04H *3/00*
U.S. Cl. 156—441 **9 Claims**



1. Spray spinning apparatus form making a tubular nonwoven product of indefinite length having a predetermined radial density gradient, comprising:
spray spinning means for producing a plurality of substantially continuous filaments of synthetic resinous material, attenuating the filaments, and conveying the filaments in a stream such that the filaments have a predetermined distribution along a line passing transversely through the filament stream; and
collection means positioned transversely of the filament stream, operable to collect the filaments and form a tubular

non-woven product of indefinite length therefrom, and including

mandrel means operable to receive the filaments along an axial extent thereof and having a cylindrical surface, and

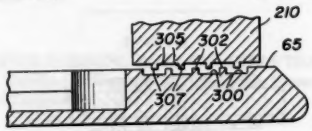
press roll means operable in conjunction with the mandrel means to urge the collected filaments axially off the mandrel means as a tubular product of indefinite length, and including a contoured surface which cooperates with the cylindrical surface to define a gap of varying radial height in which the predetermined distribution of filaments is collected and compressed to a predetermined radial density gradient.

4,240,865

APPARATUS AND METHOD FOR APPLYING PLASTIC STRAP

Robert B. Kyts, Chicago, Ill., assignor to Interlake, Inc., Oak Brook, Ill.

Continuation of Ser. No. 701,306, Jun. 30, 1976, abandoned.
This application Jun. 25, 1979, Ser. No. 51,732
Int. Cl.³ B65B *13/02*
U.S. Cl. 156—494 **8 Claims**



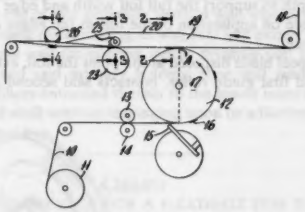
1. Strapping apparatus for securing a length of plastic strap around an object, said apparatus comprising a frame, strap-gripping means mounted on said frame for holding the strap encircled in a loop in a tensioned condition about the object with the leading end of the strap overlapping the supply portion thereof, heating means carried by said frame adjacent to the overlapping strap portions for effecting melting of the facing portions thereof, a first pressure member carried by said frame and having a plurality of elongated and equal-width first grooves therein equidistantly spaced apart by first ribs, and a second pressure member carried by said frame and having a plurality of elongated and equal-width second ribs projecting therefrom equidistantly spaced apart by second grooves, each of said first and second grooves being rectangular in transverse cross section and having an elongated flat rectangular recessed surface, each of said first and second ribs being rectangular in transverse cross section and having an elongated flat rectangular end surface with the width of each said end surface being no greater than about one-third the width of each groove recessed surface, said end surfaces of said first and second ribs being respectively disposed centrally of and in parallel facing relationship with said second and first groove recessed surface in longitudinal alignment therewith, said pressure members being movable with respect to each other to a sealing configuration wherein said first and second ribs are disposed in equidistantly spaced-apart interdigitated relationship with said ribs and said grooves cooperating to press together therebetween the melted overlapping strap portions and to deform the overlapping strap portions in a predetermined pattern as they are pressed together, whereby the pressure of said pressure means is substantially evenly distributed throughout the interface between the melted overlapping strap portions for formation of a strong joint therebetween.

4,240,866

APPARATUS FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN THE TRANSVERSE DIRECTION

John F. Rega, Milltown, N.J., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Oct. 18, 1979, Ser. No. 86,219
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—496 **10 Claims**



2. Apparatus for intermittently applying discrete lengths of an elastic material transverse of a continuously moving web comprising;

a rotatable gripping and releasing member;

means for intermittently supplying discrete lengths of an elastic material having adhesive on one surface to the gripping portion of said gripping and releasing member;

a chute disposed adjacent and tangantial to the surface of the gripping and releasing member at the point where said member changes from gripping to releasing, said chute extending in both directions from said point;

means for conveying a web at the same linear speed as the linear speed of the rotatable gripping and releasing member over said chute with the longitudinal sides of the web straddling the chute and disposed adjacent opposite ends of said elastic material;

means for urging the longitudinal sides of the web against the surface of the rotatable gripping and releasing member just as the cut length of elastic material is released to adhere the ends of the cut length to the longitudinal sides of the web;

means disposed downstream from said chute for diverging the longitudinal sides of the web with respect to each other to flatten the web, stretch the center portion of the cut length of elastic material and adhere said center portion to the web.

4,240,867

APPARATUS FOR DISPENSING ADHESIVE-BACKED FOIL

Herbert F. Diegel, 1524 E. Culver, Phoenix, Ariz. 85006

Filed May 3, 1978, Ser. No. 902,298
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—543 **7 Claims**

1. Apparatus for dispensing a strip of adhesive backed foil having a foil side and an adhesive side from a roll and applying the foil along and extending laterally from the edges of a substantially flat workpiece free of a peel off adhesive protective covering, the foil being of a width greater than the width of the edges of the workpiece, said apparatus comprising in combination:

(a) a frame;

(b) means for rotatably supporting the roll upon said frame;

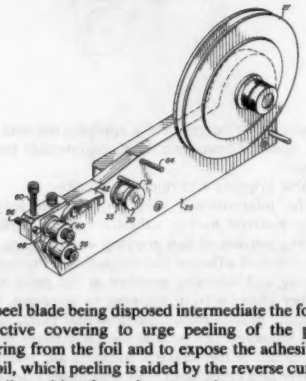
(c) a first guide roller rotatably mounted on said frame for guiding the foil, said first guide roller including a circumferential groove of a width commensurate with the width of the foil for contactingly receiving the protective covering side of the foil;

(d) a second guide roller rotatably mounted on said frame for guiding the foil from said first guide roller to the edges of

the workpiece, said second guide roller including a circumferential groove of a width commensurate with the width of the foil for receiving the foil side of the foil and exposing the adhesive side of the foil to the edges of the workpiece, said second guide roller being vertically and horizontally positioned with respect to said first guide roller to define a Z-shaped path for the foil transported from the roll to the edges of the workpiece;

(e) each of said grooves of said first and second guide rollers having a rectangular cross-section and being of a constant depth to support the full foil width and edge of the workpiece on application of the foil to the edges of the workpiece;

(f) a peel blade disposed at the point the foil, extending from said first guide roller, contacts said second guide roller,



said peel blade being disposed intermediate the foil and the protective covering to urge peeling of the protective covering from the foil and to expose the adhesive side of the foil, which peeling is aided by the reverse curvature of the foil resulting from the supporting contact of the foil with said groove of said second guide roller; and

(g) pin means for slidingly contacting a lateral surface of the workpiece to guide the edges of the workpiece with respect to said groove of said second guide roller, said pin means including means for adjustably locating said pin means relative to said groove of said second guide roller to accommodate different thickness workpieces and determine the positional relationship between the edges of the workpiece and the foil disposed in said groove of said second guide roller.

4,240,868

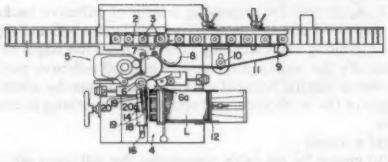
LABEL FEEDING APPARATUS

Yasuaki Nagano, Kanazawa, Japan, assignor to Shibuya Kogyo Co., Ltd., Ishikawa, Japan

Filed May 30, 1979, Ser. No. 43,721

Int. Cl.³ B65C *9/08*

U.S. Cl. 156—572 **6 Claims**



1. An apparatus for feeding labels one by one to a label sticking device which sticks labels on containers, comprising:

a label magazine storing a quantity of labels;

a guide lever pivotally supported in the vicinity of the exit of said label magazine;

a slide member slidably mounted on said guide lever;

holding means provided on said slide member for holding a label temporarily;

a first driving shaft;

a crank arm fixedly mounted on said first driving shaft;

means for connecting said slide member with said crank arm;

a second driving shaft which is driven in synchronism with said first driving shaft;

a cam fixedly provided on said second driving shaft; and

a cam follower integrally provided with said guide lever and operatively connected to said cam.

4,240,869

METHOD FOR MANUFACTURING A PHOTO CATHODE FOR ELECTRORADIOGRAPHIC AND ELECTROFLUOROSCOPIC APPARATUS

Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 962,928

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754526

Int. Cl.³ B44C *1/22*; B23P *15/00*; C03C *15/00*; C23F *1/02*

U.S. Cl. 156—643 **2 Claims**

1. A method for manufacturing perforated double layer foils having two outer electrically conductive layers of a material with a high atomic number and an insulating layer disposed between said two outer layers, for use as a photocathode for electroradiographic and electrofluoroscopic apparatus comprising:

(a) first briefly etching a highly insulating plastic film with a dielectric strength of at least 10^4 V/cm in an oxygen or argon-oxygen plasma;

(b) then vapor-depositing or sputtering an electrically conductive layer on both sides of the plastic film;

(c) subsequently vapor-depositing or sputtering a metallic intermediate layer of titanium onto each of said electrically conductive layers;

(d) then applying hole masks to the respective metallic intermediate layers, using a photoresist technique, such that the holes of the masks are opposite each other;

(e) then etching a hole pattern into each of the metallic intermediate layers, using said hole masks which have been applied to the intermediate layers, by means of sputter etching in an argon plasma with a partial oxygen pressure of less than 10^{-6} Torr;

(f) subsequently etching the hole pattern into the electrically conducting layers, using said hole masks applied to the metallic intermediate layer, by means of sputter etching in an argon plasma with a partial oxygen pressure higher than said pressure of 10^{-6} Torr; and

(g) finally removing those parts of the plastic film which close .off the holes of the electrically conductive layers, whereby the masks of the photoresist material and of the intermediate layers are also removed.

4,240,870

FILLED PAPER

Hiroji Shibazaki, Takarazuka; Setsuji Edagawa, and Hisashi Hasegawa, both of Nishinomiya, all of Japan, assignors to Shiraishi Kogyo Kaisha, Ltd., Amagasaki, Japan

Filed Sep. 11, 1979, Ser. No. 74,317
Claims priority, application Japan, Sep. 13, 1978, 53-113423
Int. Cl.[3] D21H 3/78
U.S. Cl. 162—181 A 4 Claims

1. A filled paper characterized in that the paper is filled with at least one of

(i) a calcium carbonate in the form of particles comprising a core about 0.5 to about 6.5 μm in average diameter and about 100 to about 4000 projections formed on the surface of the core and having a length (L) of about 0.25 to about 2.00 μm, a diameter (D) of about 0.08 to about 0.20 μm and an aspect ratio (L/D) of about 3 to about 10, the calcium carbonate having a void volume of about 1.0 to about 1.8 ml/g and an oil absorption of about 45 to about 60 ml/100 g, and

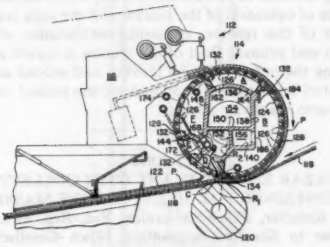
(ii) a calcium carbonate in the form of particles comprising a core about 0.2 to about 2.0 μm in average diameter and about 100 to about 4000 projections formed on the surface of the core and having a length (L) of about 0.15 to about 4.00 μm, a diameter (D) of about 0.5 to about 0.20 μm and an aspect ratio (L/D) of about 3 to about 20, the calcium carbonate having a void volume of about 1.8 to about 3.3 ml/g and an oil absorption of about 50 to about 100 ml/100 g, wherein said calcium carbonate is present in an amount of at least 5% of the dry weight of the paper obtained.

4,240,871

PAPER FORMING ROLL CONSTRUCTION

James H. Burkhart, Monroe, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 40,012
Int. Cl.[3] D21F 1/60
U.S. Cl. 162—274 24 Claims



1. Paper forming roll comprising:

(a) a stationary pressure box;

(b) a generally cylindrical rotatable foraminous shell extending around said box;

(c) paper making wire on the outside surface of said shell;

(d) spacing means extending radially from said box to said shell, said spacing means being secured to said box;

(e) a plurality of circumferentially extending zones defined by said box, said shell, and said spacing means,

wherein a first one of said zones is a forming zone, a second one of said zones is a primary holding zone, a third one of said zones is a transfer zone, and at least a fourth one of said zones is a secondary holding zone for holding water during operation of said forming roll;

said box including a plurality of external walls and a plurality of internal walls defining a plurality of pressure chambers, a first one of said external walls including means providing communication between said forming zone and a first one of said pressure chambers from which vacuum for forming purposes may be achieved, a second one of said external walls extending generally vertically from one end of said first one of said external walls to partially define said primary holding zone, said generally vertical wall also including means providing vacuum communication between said primary holding zone and a second one of said pressure chambers; and

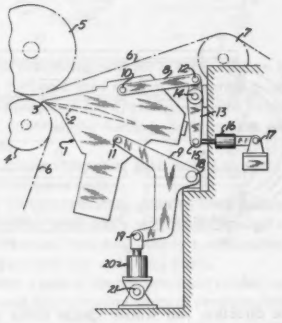
drip means located in said primary holding zone and extending generally parallel to said generally vertical wall from a circumferential extension of said first one of said external walls in the immediate vicinity of the upper end of said generally vertical wall whereby water containing fibers finding its way into said primary holding zone past the spacing means dividing said forming zone and said primary holding zone will readily fall with fibers entrained therein to the lower inner surface of said shell without impinging upon or adhering to the pressure box.

4,240,872

SUSPENSION DEVICE FOR A HEADBOX FOR PAPER AND PULP MACHINES

Douglas Wahren, Karlstad, Sweden, assignor to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Mar. 13, 1979, Ser. No. 19,940
Claims priority, application Sweden, Mar. 17, 1978, 7803137
Int. Cl.[3] D21F 1/02
U.S. Cl. 162—344 11 Claims



1. Apparatus for suspending a headbox for paper and pulp machines adjustably to bring the headbox slice opening in predetermined relation to a web forming zone comprising

a first link extending generally in the direction of the slice opening and having one end near the slice opening pivotally mounted on the headbox and another end away from the slice opening movably supported on a frame,

a second link extending generally in the direction of the slice opening in spaced relation to said first link and having one end near the slice opening pivotally mounted on the headbox and another end away from the slice opening pivotally supported on said frame, said first and second links converging in the direction of the slice opening, and

means for translating one of said links in the direction of its length to move the headbox so as to adjust the position of the slice opening in relation to the web forming zone.

4,240,873

SOLENOIDAL FUSION SYSTEM

William I. Linlor, 1010 Madison Dr., Mountain View, Calif. 94040

Filed Sep. 22, 1978, Ser. No. 945,011
Int. Cl.[3] G21B 1/02
U.S. Cl. 176—3 9 Claims

1. In an apparatus for nuclear fusion of the type having:

a. elongated vacuum chamber means to provide an evacuatable containment volume having an axis of symmetry;

b. vacuum pump means communicating with said vacuum chamber so as to maintain a gas pressure less than 10^{-3} torr within the vacuum chamber;

c. means for producing magnetic fields so that said magnetic fields are present substantially throughout said vacuum chamber, said magnetic-field-producing means consisting of solenoidal windings so disposed that the axis of the magnetic field is essentially parallel to the axis of the elongated vacuum chamber;

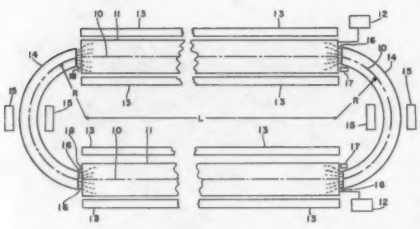
an improved particle-injection apparatus comprising:

d. means for injecting fusible energetic particles having kinetic energy greater than 10^4 electron-volts, so as to enter said magnetic fields in the direction approximately perpendicular to the axis of said vacuum chamber, but having sufficient inclination so as to avoid impact on said injection means;

e. means for changing the charge state of said fusible particles while within said magnetic fields so that the resulting ions are produced within said magnetic fields to form ion beams;

f. said injection and change-in-charge-state being accomplished for a period of time so that said ion beams attain a density greater than 10^{12} particles per cubic centimeter;

g. said ion beams consisting of fusible species such as deuterons and tritons whose velocities are approximately in the



same direction and whose speeds differ so as to cause fusion reactions in overtaking collisions between said ion beams, this being stated mathematically:

$$V_D = V_T + V_{rel}$$

where V_D represents the velocity of one species of fusible ions, such as deuterons, V_T represents the velocity of another species of fusible ions, such as tritons, and V_{rel} represents the difference in velocity of said fusible species, such as deuterons and tritons;

h. said ion beams such as deuterons and tritons having approximately equal momenta per unit electric charge, this being stated mathematically:

$$M_D V_D Q_T = M_T V_T Q_D$$

where M_D and V_D represent, respectively, the mass and the velocity of one species of fusible ions, such as deuterons; and M_T and V_T represent, respectively, the mass and the velocity of another species of fusible ions, such as tritons; and Q_D and Q_T represent, respectively, the electric charges of the fusible ions, such as deuterons and tritons;

i. means for producing electrons within and in the vicinity of said ion beams so as to substantially neutralize the charge of said ion beams, thereby producing an essentially neutral plasma.

4,240,874

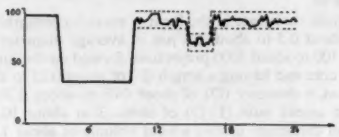
PROCESS FOR CONTROLLING THE REACTIVITY EFFECTS DUE TO THE POWER VARIATIONS IN PWR NUCLEAR REACTORS

Jean-Paul Millot, Elancourt, France, assignor to Framatome, Paris, France

Filed Jun. 20, 1978, Ser. No. 917,401

Int. Cl.³ G21C *7/06*

U.S. Cl. 176—22 **5 Claims**



1. A process for controlling the reactivity effects due to the power variations in a nuclear reactor using pressurized water, said process comprising moving sets of movable clusters consisting of a certain number of full-length rods of absorbent material inside the fuel units of said reactor, said rods being called full-length rods since their lengths are the same as the length of the fuel units and varying the concentration of soluble boron in the primary fluid of said reactor in order to correct long-term reactivity effects, wherein first sets of said movable clusters, at least one of which sets consisting of clusters having a reduced number of full-length rods of absorbent material has an anti-reactivity of less than 700 ppht, are moved solely as a function of the power required of the turbine, moved by the steam produced by the reactor, a second set of said movable clusters, which is composed of very absorbent clusters consisting of a great number of full-length rods of absorbent material, is simultaneously moved as a function of the difference which exists at any time between the mean temperature of the reactor core and a reference temperature, which is a function of the level of power required, said second set being movable between control limits which are defined by the mode of operation of the reactor and the state reached by the core of this reactor, and said concentration of soluble boron in said primary fluid of the reactor is varied to permit regulating the temperature by moving said second set within said control limits thereof in addition to the normal correction of long-term reactivity effects.

4,240,875

NUCLEAR ENERGY PLANT WITH COLLECTING CONTAINER FOR MELTING CORE MASSES

Werner Katscher, Jülich-Stetternich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 693,333, Jun. 7, 1976, abandoned. This application Jan. 10, 1978, Ser. No. 868,289

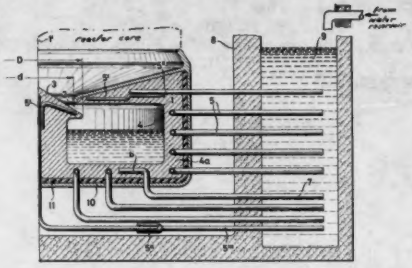
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1975, 2525554

Int. Cl.² G21C *15/12, 15/18*

U.S. Cl. 176—38 **5 Claims**

1. A passive emergency cooling system independently operable for a nuclear energy plant emergency which includes in combination: a reactor core, a collecting container having a heat-conducting and heat-resisting inner wall portion, an outer supporting wall and an intermediate thermal insulating layer between said inner wall portion and said outer wall, said container being arranged below said reactor core for collecting molten core masses, an outer reactor-protecting container means arranged in spaced relationship to and surrounding said collecting container, an annular cooling tank open toward the atmosphere and arranged externally accessible outside of and surrounding said said reactor-protecting container means, cooling pipes designed as heat pipes and inserted in said inner wall portion of said collecting container so that during a break

of interruption of the cooling pipes care is taken that no fission products come into the environment, one end of said heat pipes being evaporator ends extending into and terminating within said inner wall portion of said collecting container, said pipes



being passed through said outer reactor-protecting container means, the other end of said heat pipes being condensor ends and extending into and terminating in said cooling tank located externally accessible always to maintain cooling capability open toward the atmosphere regardless of any internal failure.

4,240,876

NUCLEAR FUEL ASSEMBLY

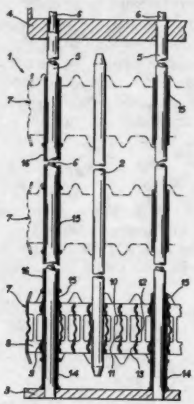
Jacques Delafosse, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 10, 1978, Ser. No. 904,484

Claims priority, application France, May 13, 1977, 77 14754

Int. Cl.³ G21C *3/30*

U.S. Cl. 176—78 **2 Claims**



1. A nuclear fuel assembly comprising, a rigid structure formed by a top plate, a spaced, parallel, bottom end plate, and a series of tie rods connecting said plates at uniform intervals,

a bundle of clad fuel pins disposed in spaced parallel relation to each other and maintained in a uniform lattice by means of an array of grids equipped with elements adapted to support the fuel pins by resiliently pressing against said fuel pins,

a series of guide sleeves secured to the nodes of the grid lattice and through which said tie rods are slideably disposed, and

a series of tubular spacer members mounted on at least a portion of said tie rods between said bottom plate and the guide sleeves secured to the lowest of said grids and between adjacent guide sleeves, so as to support said grids and provide a clearance space between said plates and the fuel pins.

4,240,877

METHOD FOR PREHEATING COAL FOR COKING

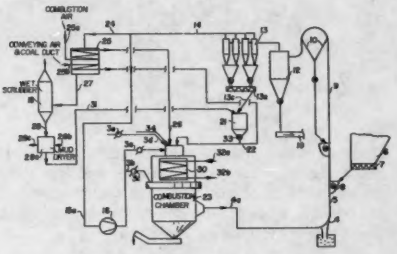
Dieter Stahlherm, Recklinghausen; Gerhard Rutkowski, Mülheim an der Ruhr; Janos Bocsanczy, Recklinghausen, and Hans Becker, Tönisvorst, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 35,205

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819232

Int. Cl.³ C10B *57/10, 31/00, 57/08*

U.S. Cl. 201—41 **6 Claims**



1. A method of preheating coal for coking, with an immediately following carbonization thereof, comprising, directing moist coal to be coked into hot operating gases to transfer heat and preheat the coal thereby cooling the operating gases and generating steam,

separating the cooled operating gases with a quantity of coal dust from the heated coal,

dedusting the cooled operating gases to form dedusted and cooled operating gases and a separated fine coal dust,

burning said separated fine coal dust in a combustion chamber to produce said hot operating gases,

admixing at least a part of the dedusted and cooled operating gases with said hot operating gases to produce fresh operating gases,

controlling the amount of the fine coal dust fraction removed from said operating gases during said dedusting step as a function of grain size by varying the maximum grain size up to which the fine coal dust is separated from the coal,

storing the separated fine coal dust and using the amount stored as a controlled variable for controlling the amount of fine coal dust fraction to be removed from said operating gases during said dedusting step, and

supplying a metered amount of said stored fine coal dust to the combustion chamber in which the hot operating gases are produced.

4,240,878

METHOD OF FORMING A PLATINUM LAYER ON TANTALUM

William W. Carter, Conesus, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 923,814, Jul. 12, 1978, abandoned. This application Nov. 2, 1979, Ser. No. 90,630

Int. Cl.³ G01R *31/12*

U.S. Cl. 204—1 T **4 Claims**

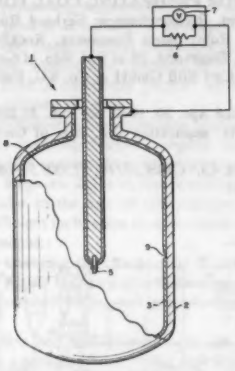
1. A method which comprises:

(a) forming a layer of platinum black by electrolysis on the surface of a tantalum or tantalum base alloy electrode;

(b) heating said electrode in an inert atmosphere at a temper-

ature in the range of about 1050° to 1150° C. for about 30 minutes to 60 minutes, and

(c) utilizing said electrode for the detection of faults in the glass lining of an iron or steel vessel by disposing said



electrode in a conductive medium within said vessel, and measuring the current flow between said electrode and the exposed iron or steel surface at a damage area of the glass lining, whereby the composite electrode and exposed iron or steel form a Pt-Fe cell.

4,240,879

METHODS OF MEASURING THE CONCENTRATIONS OF IONS

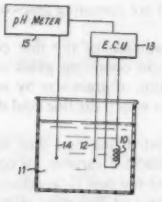
John V. Dobson, Hartlepool, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 488,244, Jul. 12, 1974. This application Jan. 21, 1977, Ser. No. 760,954

Claims priority, application United Kingdom, Jul. 18, 1973, 34132/73

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **7 Claims**



1. A method of measuring the concentration of a particular ion in a liquid, comprising the steps of

contacting the said liquid with an ion selective electrode which includes a metal and a hydride of the metal,

monitoring the concentration of hydrogen in the metal while the ion selective electrode is in contact with the said liquid by monitoring a hydrogen concentration-related property of the metal,

supplying hydrogen to the said metal while the said electrode is in contact with the said liquid during the intervals at least partially determined in accordance with said monitoring to maintain the said concentration of hydrogen from a predetermined range such that the electrode potential remains constant when measured in a solution having a constant concentration of the said particular ion, and

measuring the potential between the ion selective electrode and a reference electrode in contact with the liquid.

4,240,880

METHOD AND APPARATUS FOR SELECTIVELY PLATING A MATERIAL

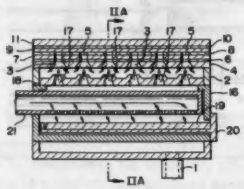
Akira Tsuchibuchi, Sayama, and Takashi Kobayashi, Itsukaichimachi, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,639

Claims priority, application Japan, Jul. 25, 1978, 53/90650

Int. Cl.³ C25D *5/02, 17/02*

U.S. Cl. 204—15 **10 Claims**



1. In an apparatus for selectively plating a material which comprises an outer case having an upper lid which contains a through-hole of a shape substantially equal to that of at least one portion of the material to be plated, an elastic mask plate member having an opening of a shape defining the portion to be plated over the upper lid, a movable elastic pressing plate member adapted to press and hold the material to be plated in contact with the mask plate member, an inner case within the outer case, said inner case having an upper wall and a lower wall, at least one nonelectroconductive nozzle plate mounted in the upper wall of the inner case and forming at least one plating solution jetting port to jet a plating solution onto the exposed portion of the material to be plated, each plating solution jetting port having a shape and position corresponding to the portion to be plated, the improvement wherein a replaceable soluble anode of the plating element is located with said inner case, and a plating solution feeding tube is also located within said inner case, said feeding tube including means for jetting the plating solution uniformly toward said replaceable soluble anode.

4,240,881

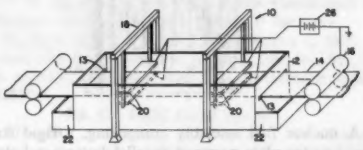
ELECTROPLATING CURRENT CONTROL

Andrew Stanya, North Royalton, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 2, 1979, Ser. No. 8,594

Int. Cl.³ C25D *7/06, 17/00*

U.S. Cl. 204—28 **26 Claims**



1. An automatic plating current control system for a plating apparatus including means for passing a workpiece through a plating bath and a plurality of power circuits for delivering a plating current to the bath, said automatic control system comprising:

(a) a reference generator for producing a reference signal representing a predetermined plating current; and

(b) closed loop feedback control circuitry coupled between the reference generator and the power circuits for sensing the total current applied by the power and controlling circuits of said current represented by said reference signal and modifying the current output of said power cir-

cuits as a function of the difference between said sensed current and the predetermined current;

(c) said reference generator including means for selectively modifying said reference signal as a function of the number of operative power circuits in said system thereby maintaining the predetermined plating current while adjusting the current output of each operative power circuit.

4,240,882

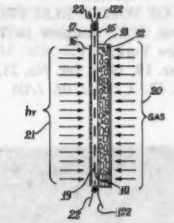
GAS FIXATION SOLAR CELL USING GAS DIFFUSION SEMICONDUCTOR ELECTRODE

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 8, 1979, Ser. No. 92,484

Int. Cl.³ C25B *3/00*; H01M *6/30*; C25B *1/00*

U.S. Cl. 204—75 **52 Claims**



39. A process for molecular gas photo-reduction comprising the steps:

passing molecular gas to be reduced through a hydrophobic gas diffusion region on one side of a porous matrix diffusion layer of a gas diffusion photosensitive cathode and contacting a p-type semiconductor supported by the other side of said porous matrix diffusion layer;

passing illumination through an opposing light passing anode and a liquid electrolyte in contact with said anode and said cathode to illuminate said p-type semiconductor producing a positive shift in the potential of the semiconductor causing a cathodic photocurrent, said cathodic photocurrent causing reduction of the molecular gas to a fixed state at the semiconductor-electrolyte interface with concomitant oxidation of the electrolyte at the anode;

providing ionic conductance between the cathode and anode by a flowing liquid electrolyte in contact with said cathode and anode, the anolyte and catholyte portions of the electrolyte being chemically separated by a light passing and ionic conducting separator;

providing removal of the formed fixed material from and supply of electroactive electrolyte to said cathode by said flowing electrolyte; and

passing electrons produced by oxidation of said electrolyte at said anode through an external electronic circuit to said cathode for completion of the electronic circuit, said external electronic circuit providing a bias voltage to said cathode from an external power source.

50. The process for molecular gas photoreduction of claim 39 wherein said molecular gas is nitrogen which is reduced to ammonia or hydrazine.

51. The process for molecular gas photoreduction of claim 39 wherein said molecular gas is carbon dioxide which is reduced to methanol or methane.

4,240,883

METHOD FOR ELECTROLYSIS OF AN AQUEOUS ALKALI METAL CHLORIDE SOLUTION

Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,774

Claims priority, application Japan, Dec. 28, 1978, 53-163591

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **5 Claims**

1. Method for electrolysis of an aqueous alkali metal chloride solution which comprises carrying out electrolysis by maintaining a temperature of an aqueous alkali metal hydroxide liquor in a cathode compartment lower than that of the aqueous alkali metal chloride solution in an anode compartment, using an electrolytic cell which is separated by a cation exchange membrane into the anode compartment and the cathode compartment.

4,240,884

ELECTROLYTIC PRODUCTION OF ALKALI METAL HYPOHALITE

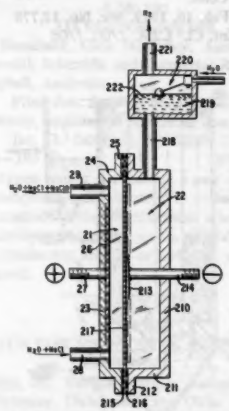
Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jun. 19, 1979, Ser. No. 50,143

Claims priority, application Italy, Feb. 15, 1979, 20232 A/79

Int. Cl.³ C01B *11/26*; C25B *1/26*

U.S. Cl. 204—95 **3 Claims**

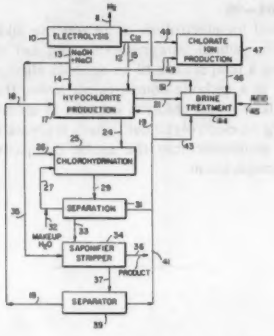


1. An electrolytic process for producing an alkali metal hypohalite solution comprising passing an aqueous alkali metal halide solution through the anode compartment of an electrolysis cell having an anode compartment and a cathode compartment separated by a fluid-impervious anion-permeable membrane with an anode in the anode compartment and a cathode in the cathode compartment, providing an aqueous support catholyte in the cathode compartment, applying an electric potential across the cell sufficient to evolve halogen at the anode and reduce water at the cathode and recovering an effluent solution from the anode compartment containing alkali metal hypohalite.

4,240,885
OXIDATION OF ORGANICS IN AQUEOUS SALT SOLUTIONS

George D. Suciu, Ridgewood, and John E. Paustian, Whippany, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jul. 30, 1979, Ser. No. 61,743
Int. Cl.[3] C25B *1/34*
U.S. Cl. 204—98 24 Claims

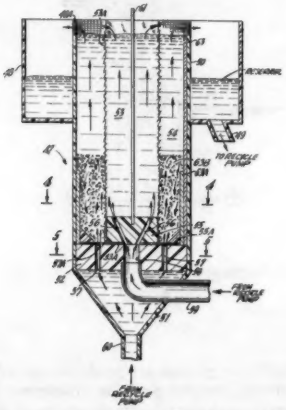


14. The process of claim 7 wherein prior to the treating the aqueous brine cell contains at least 1000 ppm of organics.

4,240,886
ELECTROWINNING USING FLUIDIZED BED APPARATUS

Donald R. Hodges, Denver; William G. Sherwood, Golden, both of Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,778
Int. Cl.[3] C25C *1/00, 1/08*
U.S. Cl. 204—112 6 Claims



1. A process for extracting metal ions from electrolytes in a fluid bed electrolysis cell which comprises:

establishing an electrolyte bath containing at least one metal value in a fluid bed electrolysis cell comprising,

an anode disposed axially in said cell within an anode chamber surrounded by a porous diaphragm,

a cathode surrounding the porous diaphragm of said anode chamber, said cathode defining an annular cathode chamber relative to said porous diaphragm and containing a fluidizable cathode bed of electrically conductive particulate material isolated from said anode chamber,

maintaining a flow of said electrolyte through said cell by passing said electrolyte axially through said cell beneath said fluidizable cathode bed at a rate to maintain said cathode bed in a fluidized electro-chemically active cathodic state, the volume of the electro-chemically active bed ranging from about 5% to 20% greater than its static volume,

electrolytically activating said cell to effect deposition of at least one metal value on the particulate material of said fluidized bed during which gas bubbles are formed by electrolysis,

causing said flow of electrolyte leaving said cell to collect in a reversoir to permit disengagement and removal of said gas bubbles from said electrolyte,

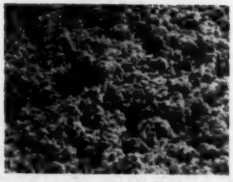
recycling said electrolyte from said reservoir to said cell and through said anode and cathode chambers,

and continuing said electrolysis for a time sufficient to effect the desired amount of metal deposition from said electrolyte.

4,240,887
PROCESS OF WATER ELECTROLYIS

Dale E. Hall, Monroe, N.Y., assignor to The International Nickel Co., Inc., New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,966
Int. Cl.[3] C25B *1/04, 1/06*
U.S. Cl. 204—129 3 Claims



1. A process of electrolyzing water comprising passing direct current at an anode current density of at least 125 mA/cm^2 through an aqueous solution of at least 4 N alkali hydroxide maintained at a temperature of at least 60° C. between an iron-nickel alloy anode, said alloy consisting of about 37% to about 39% nickel, balance iron and a cathode.

4,240,888
METHOD OF ELECTROCHEMICALLY PROCESSING METALLIC SURFACES OF WORKPIECES

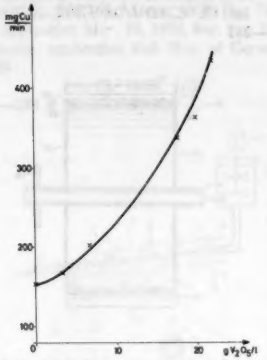
Wolfgang Faul; Leander Fürst, both of Jülich, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,138
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850605
Int. Cl.[3] C25F *3/02, 3/14*
U.S. Cl. 204—129.75 4 Claims

1. A method of electrochemically processing metallic surfaces of workpieces in an electrolysis cell having an anode and a cathode, comprising the steps of:

providing in said electrolysis cell an electrolyte formed by: suspending in said electrolyte pulverous particles of one of the group consisting of graphite and activated carbon; and dissolving in said electrolyte one of the group consisting of a V^{+5} compound and a vanadium-containing compound adapted to form V^{+5} ions on said anode;

charging said pulverous particles on said anode so that said particles conduct an electric charge to said workpiece; shielding said cathode so that said charged pulverous particles cannot discharge thereon; and



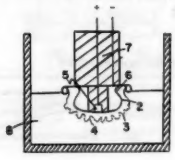
bringing a workpiece into contact with said electrolyte in such a way that said workpiece does not contact said anode and said cathode.

4,240,889

ENZYME ELECTRODE PROVIDED WITH IMMOBILIZED ENZYME MEMBRANE

Kentaro Yoda, Otsu; Rintaro Urakabe, Shiga, and Toshio Tsuchida, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Jan. 24, 1979, Ser. No. 6,070
Claims priority, application Japan, Jan. 28, 1978, 53/8590
Int. Cl.³ C12Q *1/26*
U.S. Cl. 204—195 B **3 Claims**



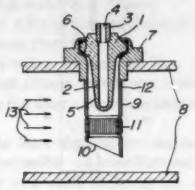
1. In an enzyme electrode useful for a polarographic determination of a slight amount of component in a test solution comprising an anode, a cathode, an immobilized enzyme membrane and an electrolyte, the improvement comprising an immobilized enzyme membrane consisting of a dense skin layer and a porous layer wherein the enzyme is immobilized onto the porous layer of the membrane, said skin layer having a selective hydrogen peroxide permeability, and said immobilized enzyme membrane being arranged so that the skin layer is an extended layer and is faced to the anode and the porous layer immobilized with the enzyme is in the position of contacting with the test solution.

4,240,890

OXYGEN PARTIAL PRESSURE MEASURING DEVICE SUITABLY ADAPTED FOR INTERNAL COMBUSTION ENGINE EXHAUST GASES

Tetsuo Watanabe, Nagoya; Shigetaka Wada, Kuwana, and Shigeo Soejima, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 846,185, Oct. 26, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,765
Claims priority, application Japan, Oct. 29, 1976, 51/129335
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S **7 Claims**



1. In an oxygen partial pressure measuring device for determining oxygen partial pressure in exhaust gases, the device comprising a cylindrical body and an oxygen concentration cell of oxygen ion conductive solid electrolyte therein, said device to be inserted into the exhaust gas stream, the improvement comprising a monolithic structure, which is formed with a multiplicity of substantially parallel channels through which said exhaust gases are burnt and become under the equilibrium condition, accommodated within said cylindrical body and so located therein that exhaust gas to be measured reaches said oxygen concentration cell after it has passed through said monolithic structure.

4,240,891

OXYGEN SENSORS

Michael J. Bannister, Glen Waverley, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jun. 6, 1979, Ser. No. 46,126
Claims priority, application Australia, Jun. 6, 1978, PD4616
Int. Cl.³ C04B *35/48*; G01N *27/58*
U.S. Cl. 204—195 S **12 Claims**

1. In an oxygen sensor comprising a pair of electrodes separated by a composite solid electrolyte material comprising an oxygen ion conductor, the improvement wherein said composite solid electrolyte material consists of 25 to 75% by vol. of oxygen ion conductor and 75 to 25% by vol. of magnesium aluminate spinel.

4,240,892

APPARATUS FOR MEASURING INTERNAL METAL STRESS

Olen L. Riggs, Jr., Bethany, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 935,549, Aug. 21, 1978. This application Jun. 13, 1979, Ser. No. 48,223
Int. Cl.³ G01N *27/02*
U.S. Cl. 204—195 F **3 Claims**

1. An apparatus for measuring internal stress in metals by surface testing comprising:

a half-cell assembly comprising

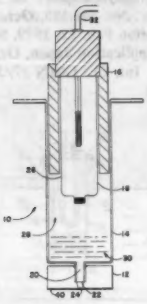
(a) a body having a passageway therethrough,

(b) a compressible mask having a passageway therethrough positionally disposed and mounted upon one end of the body surrounding the passageway therethrough, and being in communicating alignment,

(c) a reference electrode half-cell,

(d) a wiping collar having a passageway therethrough

positionally disposed and mounted about the reference electrode half-cell and at least partially insertable within the open end of the passageway through the body opposite the end whereon the compressible mask is positioned such that said wiping collar and reference elec-



trode are capable of axial movement within said passageway to compress a solution contained in said passageway, and

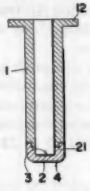
(e) a saturated electrolyte solution contained in the passageway within the body.

4,240,893

DETECTION ELEMENT FOR DETERMINING OXYGEN CONTENT AND DETECTOR FOR DETERMINING OXYGEN CONTENT USING THE SAME

Yoshiteru Hamano, Kyoto, Japan, assignor to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 26, 1978, Ser. No. 972,895
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S **8 Claims**



1. A detection element for determining an oxygen content in an environment subjected to rapid temperature changes, such as are encountered in the testing of exhaust gases from an internal combustion engine, comprising:

a ceramic tubular body having an open end with a stepped surface formed on the outer circumferential edge thereof;

an ion-conductive ceramic closing member having high thermal shock resistance fixed to said open end of the tubular body, wherein said closing member is substantially bowl-like in shape and fits over the end of the tubular body in engagement with the stepped surface, said closing member being glass sealed to the tubular body, whereby when the detection element is exposed to a sharp thermal gradient the expansion of the closing member will exert minimal pressure on the tubular body and the glass seal will be protected from heat by the closing member; and

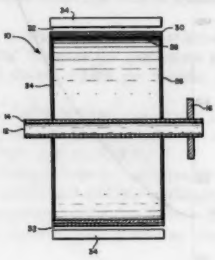
an inner and outer electrode respectively mounted on the inside and outside surface of the closing member.

4,240,894

DRUM FOR ELECTRODEPOSITED COPPER FOIL PRODUCTION

Edward Adler, 266 Arch Rd., Englewood, N.J. 07631

Filed Oct. 5, 1979, Ser. No. 82,410
Int. Cl.³ C25D *1/04, 17/12, 1/20*
U.S. Cl. 204—281 **13 Claims**



1. An improved drum structure of the type having a titanium, zirconium or tantalum stripping surface formed as an outer cylinder of titanium, zirconium or tantalum heat shrunk upon an inner support cylinder, for forming copper foil by electrodeposition onto said stripping surface and subsequent stripping therefrom; comprising:

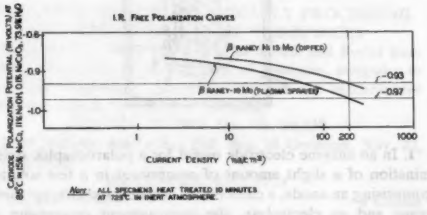
said inner support cylinder being formed with substantially at least the same elastic properties as said outer cylinder and with a substantially higher electrical conductivity and a substantially higher coefficient of thermal expansion than said outer cylinder; said inner cylinder having an outer surface provided with alternating raised portions whereby said raised portions are in intimate contact with said outer cylinder.

4,240,895

RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 29, 1979, Ser. No. 25,153
Int. Cl.³ C25B *11/06*
U.S. Cl. 204—290 R **3 Claims**



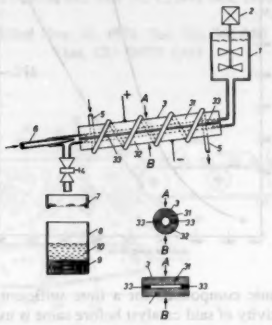
1. An improved low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell, the electrode being of the type that has a Raney metal surface layer in electrical contact with a conductive metal core, wherein the improvement comprises: said Raney metal surface layer is predominantly derived from adherent $Ni_xMo_{1-x}Al_3$ crystalline precursory surface layer structure, where x is no more than 0.95.

4,240,896

COLOR-TELEVISION SCREEN-COATING ROOM

Uwe Viohl, Aichwald, and Rolf Zondler, Stuttgart-Neugereut, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 901,369, May 1, 1978, Pat. No. 4,159,931.
This application Mar. 23, 1979, Ser. No. 23,230
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720668
Int. Cl.[3] B03C 5/00
U.S. Cl. 204—299 R 2 Claims



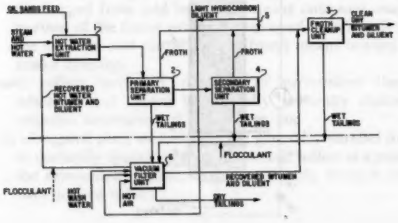
1. An arrangement for separating a red rare-earth phosphor of a color television picture tube from sediment in the drain channels of a screen-coating room including electrolysis means comprising a longitudinally divided graphite tube having tube halves and material between said halves, said tube halves serving as electrodes and said material disposed in a horizontal plane.

4,240,897

OIL SANDS HOT WATER EXTRACTION PROCESS

Thomas P. Clarke, 211 14810 51 Ave., Edmonton, Alberta, Canada (T6H 5G5)

Filed Aug. 6, 1979, Ser. No. 64,313
Claims priority, application Canada, Jun. 6, 1975, 279952
Int. Cl.[3] C10G 1/04
U.S. Cl. 208—11 LE 3 Claims



1. An improvement in a hot water extraction process for removing bitument from oil sands, the process using a primary separating unit, a secondary separating unit and a froth clean-up unit, the improvement consisting of:

a. passing first wet tailings from the primary separating unit into a vacuum filter segment having a filter medium;

b. elutriating the first wet tailings in the filter segment with hot water;

c. decanting a portion of solid free liquid from the main body in the filter segment above the filter medium, and returning the decanted portion to the primary separating unit;

d. vacuum filtering the main body of first wet tailings through the filter medium to recover bitument and hot water and form a tailings filter cake above the filter medium;

e. passing second wet tailings from the secondary separation unit and froth clean-up unit onto the filter cake;

f. elutriating the second wet tailings in the filter segment with hot water;

g. decanting a portion of solid free liquid from the main body of second wet tailings in the filter segment above the filter cake and returning the decanted portion to the primary separating unit;

h. vacuum filtering the main body of second wet tailings through the filter cake and the filter medium to recover bitumen, hot water and diluent;

i. passing hot solvent diluent through the filter cake to extract bitumen from the cake;

j. passing hot water through the filter cake to recover more bitumen and diluent which was retained therein in step i;

k. subjecting the filter cake to vacuum to reduce its moisture content;

l. rotating the filter segment and discharging the filter cake for transportation of conventional materials handling equipment to a waste dumping site; and

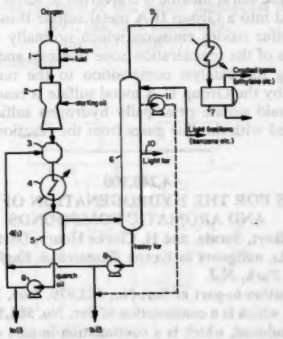
m. washing and drying the filter medium and rotating the filter segment to its original position.

4,240,898

PROCESS FOR PRODUCING HIGH QUALITY PITCH

Shimpei Gomi, Tokyo, Japan, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,771
Int. Cl.[2] C10G 9/00, 9/14
U.S. Cl. 208—40 5 Claims



1. A process for producing various pitches of high quality, which comprises the steps of: (a) adiabatically thermally cracking a starting oil in an ACR thermal cracking process at a temperature between 700° C. and 1000° C. to produce gases containing ethylene, propylene, and the like and a tar pitch having a pitch content controlled within the range of between 20 and 80 wt%; (b) heat-treating said controlled tar pitch in a heater at a temperature between about 450° C. and about 550° C. under a pressure between about 50 and 150 kg/cm^2(G) for about 1 to 15 minutes; and (c) subsequently treating it in a soaker at a temperature between about 350° and about 450° C. under a pressure between about 0.5 and about 10 kg/cm^2(G) for about 15 minutes to 10 hours.

4,240,899
SULFUR TRANSFER PROCESS IN CATALYTIC CRACKING

Elroy M. Gladrow; William L. Schuette, both of Baton Rouge, and Terry A. Reid, Slaughter, all of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 973,000, Dec. 26, 1978. This application Nov. 5, 1979, Ser. No. 91,153
Int. Cl.³ C10G *11/05, 11/18*
U.S. Cl. 208—120 **15 Claims**

1. In a process for cracking a sulfur-containing hydrocarbon feed in a cracking zone at cracking conditions by contact with a particulate cracking catalyst to produce C_3^+ product liquids and gases, flue gas being formed and coke and sulfur deposited on said catalyst during cracking, the catalyst is transferred to a catalyst regeneration zone wherein it is contacted with an oxygen-containing gas and the coke and sulfur deposits gasified and removed from the catalyst by burning, and the coke-depleted catalyst is recycled to said cracking zone for contact with additional fresh feed hydrocarbon,

the improvement comprising,

contacting the sulfur-containing hydrocarbon feed in the cracking zone with a catalyst composition comprising an admixture of composite particles, a major component particle in concentration of greater than 50 percent, based on the total weight of the catalyst, constituted of a Group VIII noble metal composited on an aluminosilicate zeolite-containing refractory inorganic oxide support in concentration ranging from about 1 part to about 50 parts, per million parts by weight of total catalyst, for providing principally cracking and combustion promoting functions, and a minor component particle present in the admixture in concentration of less than 50 percent, based on the total weight of the catalyst, constituted of a Group II-A metal composited with a refractory inorganic oxide support in concentration ranging from about 1 percent to about 50 percent, based on the weight of the minor component particles, to crack said feed and promote combustion reactions, and then

transferring the catalyst composition to the regeneration zone whereby sulfur is fixed on the minor component particles, sulfur dioxide is converted to sulfur trioxide and formed into a Group II-A metal sulfate thus suppressing the sulfur oxides emission which normally occurs with release of the regeneration zone flue gas, and then,

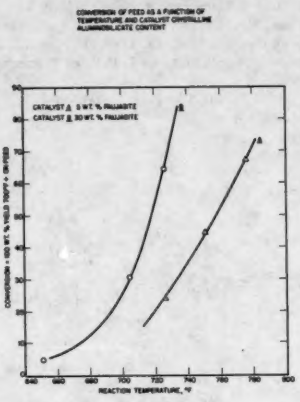
recycling the catalyst composition to the reaction zone, whereby the Group II-A metal sulfate is reacted to form from said sulfate principally hydrogen sulfide which is released with the flue gases from the reaction zone.

4,240,900
PROCESS FOR THE HYDROGENATION OF OLEFINS AND AROMATIC COMPOUNDS

John B. Gilbert, Sarnia, and H. Clarke Henry, Dartmouth, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 962,979, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 501,163, Aug. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 331,800, Feb. 12, 1973, abandoned. This application May 18, 1979, Ser. No. 40,226
Int. Cl.³ C10G *45/54*
U.S. Cl. 208—143 **20 Claims**

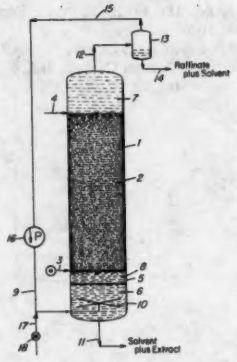
1. A process for hydrogenating the olefin and aromatic compounds present in hydrocarbon feedstocks containing less than 100 ppm of nitrogen as nitrogen-containing organic compounds which comprises contacting the feedstock with hydrogen at hydrogenating conditions, including a temperature no higher than about 720° F., in the presence of a catalyst, the catalyst comprising a mixture of (1) an amorphous base component, (2) a crystalline aluminosilicate component comprising from 5–70 wt.% of the total catalyst and having a silica/alumina mole ratio of at least 2.5 and an alkali metal content of less than about 2.0 wt.% as alkali oxide, based on the total aluminosilicate component, and (3) a hydrogenation component, wherein said catalyst is pretreated with a hydrocarbon stream containing at least 100 ppm of nitrogen as nitrogen-containing organic compounds for a time sufficient to suppress cracking activity of said catalyst before same is used to hydrogenate the low nitrogen compound content feed stock.


CONVERSION OF FEED AS A FUNCTION OF TEMPERATURE AND CATALYST CRYSTALLINE ALUMINOSILICATE CONTENT
CATALYST A 5 WT. % FAUJASITE
CATALYST B 30 WT. % FAUJASITE
CONVERSION = 100 WT. % YIELD 700°F+ UNTREED
REACTION TEMPERATURE, °F

4,240,901
PROCESS FOR REFINING HYDROCARBON OILS

Costandi A. Audeh, Princeton, N.J., and Tsoung-yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,834
Int. Cl.³ C10G *21/00*
U.S. Cl. 208—324 **6 Claims**



1. In a continuous solvent extraction process for removing undesirable components from a hydrocarbon oil, which process comprises introducing an asphalt-free hydrocarbon oil into the lower end of a contact zone contained in a vessel while introducing a selective solvent into the upper end of said contact zone, contacting the raw hydrocarbon oil and solvent in said contact zone at about atmospheric pressure and at a temperature at least about 150° F. but below the boiling point of said solvent thereby forming a raffinate plus solvent phase and a solvent plus extract phase, separating said phases in a settling zone within said vessel, upwardly flowing and recovering said raffinate plus solvent phase from said vessel, and downwardly flowiing and recovering said solvent plus extract

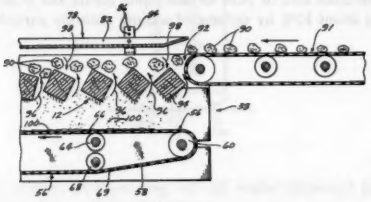
phase from said vessel; the improvement, whereby improving the efficiency of said process, which comprises upwardly flowing through said contact zone an inert gas saturated with said solvent, recovering said saturated inert gas and recycling it to said contact zone.

4,240,902

APPARATUS FOR REMOVING FOREIGN MATTER FROM COTTON

John H. Agee, R.R. 2, Woodcliff, Fremont, Nebr. 68025, and Richard W. Norris, Jr., Star Rt. C, Box 398, Hobbs, N. Mex. 88240

Filed Nov. 16, 1978, Ser. No. 961,040
Int. Cl.³ B07B *1/15*
U.S. Cl. 209—241 **13 Claims**



1. In combination with a cotton gin having an intake opening for receiving cotton therein and a conveyor for supplying cotton thereto, the improvement comprising an apparatus for removing foreign matter from the cotton, said apparatus being interposed between said intake opening and conveyor and comprising,

an elongated frame means having one end portion disposed in communication with said conveyor for receiving cotton therefrom and an opposite end portion disposed in communication with said intake opening for delivering cotton thereto,

a plurality of rollers extended transversely of said frame means,

means for rotatably supporting said rollers in side-by-side closely spaced relation on said frame means whereby said rollers cooperatively define a cotton supporting conveyor surface,

means for rotating said rollers in unison whereby cotton discharged from said conveyor means onto said one end portion of the frame means is conveyed on said rollers to the opposite end portion of the frame means toward said intake opening,

said rollers having a plurality of protrusions thereon whereby said cotton is generally vertically shaken in response to rotation of said rollers, and

an elongated plate means disposed generally parallel to and in vertically spaced relation above said rollers at a position for rebounding cotton thrown upwardly by said rollers back to said rollers.

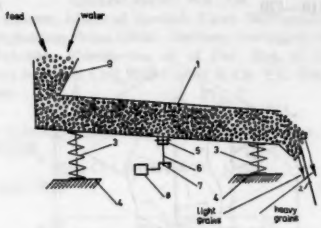
4,240,903

METHOD OF REVERSE STRATIFICATION

Stoycho M. Stoev; Shtilyana D. Djendova; Metodi S. Metodiev, and Kalinka I. Kresteva, all of Sofia, Bulgaria, assignors to Vish Minno Geoloshki Institute, Sofia, Bulgaria

Continuation-in-part of Ser. No. 799,783, May 23, 1977, abandoned. This application Jul. 21, 1978, Ser. No. 926,666
Claims priority, application Bulgaria, May 21, 1976, 33263
Int. Cl.³ B03B *5/48*
U.S. Cl. 209—437 **6 Claims**

1. A method of reverse stratification of solid particulate material containing lighter and heavier particles, which comprises forming a solid material-water mixture wherein the water is present in an amount which is necessary only to coat the particles, passing said mixture along the bottom of an inclined container from the entrance end to the exit end thereof, the bottom of the container lying in one plane, and subjecting the said mixture as it passes through the container to linear vertical vibration, whereby the heavier particles rise in



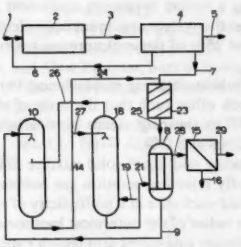
said mixture and the lighter particles sink in said mixture, and discharging in discrete layers along separate paths all of the stratified material from the exit end of the container, the weight of the solid material relative to the weight of the water lies in the range of 1:0.2 to 1:0.5.

4,240,904

PROCESS FOR BIOLOGICAL PURIFICATION OF WASTE WATER

Bernardus H. N. Dassen, Kerkrade, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Division of Ser. No. 917,359, Jun. 20, 1978, Pat. No. 4,190,528. This application Jul. 3, 1979, Ser. No. 54,434
Claims priority, application Netherlands, Jun. 27, 1977, 7707081
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ C02F *11/14*
U.S. Cl. 210—609 **8 Claims**



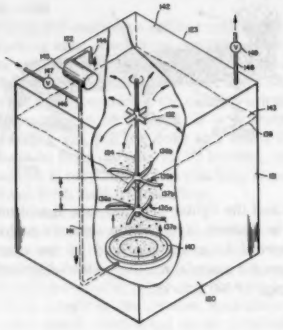
1. Process for biological purification of waste water, in which a suspension of the activated sludge formed during the purification is hydrolyzed in a basic medium and at an elevated temperature, said process being conducted by giving the suspension a pH of between about 8 and about 11 and carrying out the hydrolysis in the presence of a volatile base selected from the group consisting of ammonia and ammonium carbonate at a temperature of between about 90° C. and about 300° C., to obtain a hydrolysate containing at least one of naturally occurring amino acids or oligopeptides, desorbing at least a portion of the hydrolyzed sludge suspension to expel said volatile base, returning said volatile base to adjust said pH, and separating said hydrolysate from said suspension.

4,240,905

HIGH SOLIDS MIXTURE AERATION METHOD

Carl Scaccia, Depew, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,296
Int. Cl.³ C02F 3/20
U.S. Cl. 210—629 8 Claims



1. A method for continuously aerating a high solids concentration pseudoplastic liquid-solid mixture having a total solids concentration of at least 2.5 weight % comprising the steps of:

(a) providing a liquid-solid mixture aeration enclosure having an equivalent height H to equivalent diameter D ratio H/D between 0.5 and 5.0;

(b) providing within said enclosure:

(i) at least one vertical rotatable shaft having at least two bubble shearing means connected thereto each with at least two symmetrically disposed outwardly extending arms forming a bubble shear assembly having a maximum equivalent arm length r;

(ii) each bubble shearing means with an equivalent arm frontal width W such that W is at a valve which avoids an appreciable amount of pumping of said liquid-solids mixture by said shearing means and the W/r ratio is less than 0.1;

(iii) having a system maximum equivalent arm length R, such that the system maximum equivalent arm length R is at least 25% of the enclosure equivalent diameter D, and

(iv) said bubble shearing means being vertically spaced from each other such that the ratio of the arm frontal width W to shearing means vertical spacing S is between 0.005 and 0.04;

(c) introducing said liquid-solid mixture to said enclosure;

(d) upwardly injecting aeration gas bubbles at the lower end of said enclosure at a multiplicity of radial locations with the radius of the outermost location at least 40% of the maximum equivalent arm length r such that said gas bubbles freely rise into the liquid-solid mixture and pass through a substantial fraction of the area swept by said bubble shearing means;

(e) rotating the vertical shaft so as to provide a constant level of turbulence intensity at the level of each bubble shearing means while maintaining the shaft power density below 1.5 SHP/1000 U.S. gallon capacity of said enclosure;

(f) repeatedly shearing the freely rising gas bubbles by the rotating arms into minute gas bubbles; and

(g) continuing at least the gas bubble injection (d) and rotating (e) with minimum pumping of said liquid-solid mixture within said enclosure and such that the mixture retention time is at least 15 minutes.

4,240,906

LIQUID MEDIA CLARIFIER

Ellena L. Edmondson, 2034 Vallette Dr., Apt. 9, St. Louis, Mo. 63136

Filed Sep. 28, 1979, Ser. No. 79,587
Int. Cl.³ C02F 3/06
U.S. Cl. 210—617 6 Claims

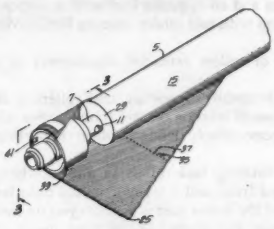
1. A composition of matter useful to enhance the clarity of liquid media, for example, in an aquarium for containing living aquatic specimens consisting essentially of at least about 50% by volume of vermiculite particles capable of providing improved propagation of aerobic bacteria at the conditions present in said aquarium, said bacteria acting to convert waste products from said aquatic specimens, and at least about 5% by volume of particles of molecular sieves capable of removing components from said liquid media which can impart an undesirable color and/or odor to said liquid media and from about 0.1 to about 10% by volume of sodium chloride particles.

4,240,907

DIALYZER AND METHOD OF DIALYSIS

Donald J. Bentley, Newport Beach, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 813,455, Jul. 7, 1977, which is a continuation-in-part of Ser. No. 708,074, Jul. 23, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,486
Int. Cl.³ B01D 31/00, 13/00
U.S. Cl. 210—646 4 Claims



1. A method of waste containing blood flow dialysis comprising:

tangentially admitting blood into a dialyzer blood inlet chamber;

passing said blood from said blood inlet chamber into and through a plurality of similarly spirally oriented semipermeable tubules packed between the dialyzer housing and a central dialyzer core;

passing blood wastes through the walls of said tubules into said dialysate;

passing the treated blood from said tubules into a dialyzer blood outlet chamber;

longitudinally restraining said tubules between said dialyzer blood inlet chamber and said blood outlet chamber;

tangentially removing said treated blood from a dialyzer blood outlet chamber;

radially distributing a fresh dialysate about the exterior of said tubules;

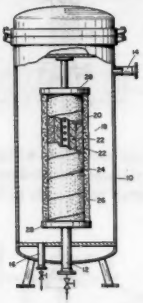
passing in a generally spirally manner said dialysate along the exterior of said tubules; and

radially removing said dialysate and blood wastes from said dialyzer.

4,240,908
COATED METAL FIBER COALESCING CELL

Robert J. Swain, Tulsa, and William D. Rutz, Sapulpa, both of Okla., assignors to Mapco, Inc., Tulsa, Okla.

Continuation of Ser. No. 708,599, Jul. 26, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,363
Int. Cl.³ B01D *17/02, 29/32*
U.S. Cl. 252—325 11 Claims



1. A method of separating oil and water dispersed in an emulsion comprising the steps of:

coating a mat of metal fibers with a layer of oleophilic material selected from a class consisting of vinyl, epoxy, acrylic, polyprophylene, polyethylene, polyvinyl chloride, Teflon and phenolic resin;

flowing the emulsion through a plurality of layers of the plastic covered mat of metal fibers in a water environment, whereby oil is coalesced and floats towards the top of the water environment; and

withdrawing the coalesced oil from the upper portion of the water environment.

5. A cell for coalescing oil droplets dispersed in a water emulsion, comprising:

an elongated perforated tube core into which the emulsion is injected;

a plurality of layers of a mat of metal fibers wound about and contiguous with said core through which the emulsion is forced to pass, the mat being formed of fibrous metal coated with a layer of oleophilic material selected from the class consisting of vinyl, epoxy, acrylic, polypropylene, polyethylene, polyvinyl, chloride, Teflon and phenolic resin, the plurality of layers of the coated metal mat providing a multi-layer cylindrical configuration; and

impervious end caps affixed to the ends of the cylindrically formed coated metal mat wound about the perforated tube, one of the end caps having an opening communicating with the interior of said center tube.

4,240,909
BORANE REDUCING RESINS FOR REMOVAL OF METAL IONS

Larry Manziek, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

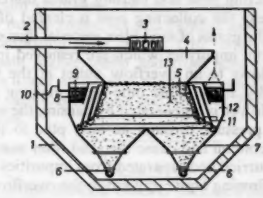
Division of Ser. No. 749,560, Dec. 10, 1976. This application Mar. 13, 1978, Ser. No. 886,221
Int. Cl.³ B01D *15/00;* C02F *1/70*
U.S. Cl. 210—688 10 Claims

1. A process for the removal of mercury, methyl mercury, antimony, arsenic, bismuth, silver, gold, palladium, platinum, rhodium, and iridium ions from aqueous and non-aqueous media which comprises contacting said media with a nonionic borane reducing resin which comprises a solid, cross-linked copolymer containing a plurality of amine- or phosphine-borane adduct functional groups, reducing the ions in solution by electron transfer and precipitating the reduced metals on and/or into the copolymer resin.

4,240,910
METHOD AND APPARATUS FOR CLARIFYING COKE QUENCHING WATER

Josef Stratmann; Manfred Strobel; Klaus Mrongowius, all of Recklinghausen; Franz Gödde, Stolberg-Venwegen, and Wolfgang Schrank, Aldenhoven, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,464
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850148
Int. Cl.³ B01D *35/00, 37/04*
U.S. Cl. 210—769 10 Claims

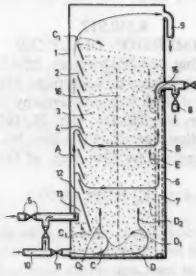


1. A method of clarifying coke quenching water where the fine portions of the solids suspended and carried along in the water are removed from the water by filtration and the clarified water is returned in an operational cycle, comprising, depositing the quenching water into the filter shaft so that the substances removed from the water themselves form a filter bed which accumulates in the shaft, continuing to pass the quenching water through the filter bed from the top to the bottom so that the solids accumulate at the top in the bed and the water is preclarified, subsequently refiltering the preclarified water in a trough basin so that it rises from the bottom to the top, directing the refiltered water into a discharge, breaking the filter bed down on its underside to remove a portion of the filter bed to substantially the same extent as is being built up on the top surface by the solids arriving with the water.

4,240,911
TOWER FILTERS WITH REVERSED WATER-JET FILTER REGENERATION

László Demeter, and Akos Demeter, both of Budapest, Hungary, assignors to Nikex Nehézipari Külkereskedelmi Vállalat, Budapest, Hungary

Filed Feb. 28, 1979, Ser. No. 16,309
Int. Cl.³ B01D *23/16, 23/24*
U.S. Cl. 210—794 6 Claims



1. A process for filtering liquids flowing horizontally

through a sand filter column in a tower filter tank having a flat collecting space comprising, causing the liquid to be filtered to flow under pressure to a vertical column of a sand filter material through an inlet pipe that guides the liquid flow from the bottom of the column upward to and through vertically situated distributing gaps which guide the liquid in a horizontal direction from the front to the back of the tower through the filter material and a diametrical perforated wall into holes in a vertical collecting pipe through which the liquid flows upward to an outlet pipe on the back wall of the tower, then regenerating the filter material in the vicinity of the collecting pipe and cleaning the inside of the collecting pipe by interrupting the flow of liquid to be filtered and reversing the flow of liquid by causing wash liquid to flow under pressure through an inlet pipe at the rate of about 5–5 m/sec. to the filter material through holes in the vertical collecting pipe in a downward direction, thereby slurrying the sand filter material in the vicinity of the collecting pipe and causing grains thereof to flow upwards whereby the collecting pipe is cleared of deposited impurities and the grains of sand filter material thus slurried are washed free from impurities which are removed in the wash liquid which flows to an overflow outlet at the top of the column; whereby at the same time the remaining sand filter material in the tower is regenerated by causing the wash liquid to flow under pressure through an inlet pipe to the bottom portion of the column and cause the sand filter material to be loosened and slurried and separated from impurities which are carried by the flowing liquid upward to the overflow outlet at the top of the tower.

4. Apparatus for filtering liquids to remove impurities therefrom comprising, in combination,

a vertical tower filter tank with a flat bottom and a flat collecting space;

said tower having therein a column of filter particles separated into at least two sections by a vertical perforated wall with holes larger than the grains of the filter particles;

distributing gaps in the front section of said column comprised of non-overlapping horizontal louvered panels situated vertically with respect to each other, which gaps direct the liquid flow horizontally;

inlet means which direct the liquid under pressure to be filtered to the distributing gaps in the column, said inlet means having a means for interrupting the flow of liquid to be filtered;

at least one vertical collecting pipe with holes for receiving the horizontally flowing liquid;

outlet means attached to a side of the tower near the top of the column for receiving the filtered liquid from the collecting pipe;

overflow means at the top portion of the sides of the tower;

means with a speed accelerating throat attached to the side of the tower near the outlet means for directing wash liquid under pressure into the collecting pipe in a flow direction opposite the flow of the filtered liquid; and

means for conducting wash water into the bottom of the filter column.

4,240,912

IMMERSION DIALYZER

Albert Stumpf, Pocking, and Jan Strejcek, Iffeldorf, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 845,516, Oct. 26, 1977, abandoned.

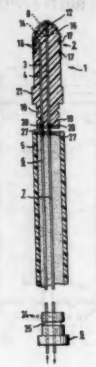
This application Apr. 25, 1979, Ser. No. 33,363

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2650730

Int. Cl.[3] **B01D** *13/00*

U.S. Cl. 210—321.2 **15 Claims**

1. An immersion dialyzer, comprising: an elongated holder tube having a central longitudinal axis and including therein at least one inlet pipe, at least one return pipe and closure means at one end of the tube; and a dialysis head comprising a dome-shaped working surface extending symmetrically about said central longitudinal axis and having a spiral groove therein, at least one inlet canal and at least one return canal, wherein the inlet canal and return canal terminate at different locations along the spiral groove in the working surface of the dialysis head thereby connecting the canals, a membrane stretchable over the dialysis head to cover the working surface thereof and



means for releasably holding the membrane in said stretched state on the dialysis head; and means for removably mounting the dialysis head on the other end of the holder tube and releasably connecting the inlet canal to the inlet pipe and the return canal to the return pipe.

4,240,913

WASHER AND HYDRO-EXTRACTORS

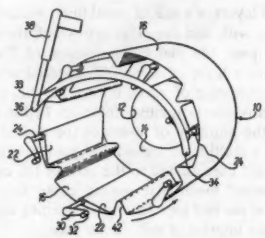
Anthony B. Burke, Huddersfield, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, England

Filed May 23, 1979, Ser. No. 41,379

Claims priority, application United Kingdom, May 26, 1978, 23343/78

Int. Cl.[3] **D06F** *23/02, 37/06;* **B01D** *33/36*

U.S. Cl. 210—373 **4 Claims**



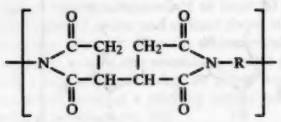
1. In a washer or hydro-extractor having a cylindrical basket adapted to be rotated about its longitudinal axis for liquid extracting operations on wet material placed therein, the improvement comprising a plurality of rigid flaps within the basket which are selectably pivotable about respective axes extending longitudinally of the basket, the flaps being adapted normally to lie substantially flat against the inner cylindrical surface of the basket, a respective cam follower rigidly coupled to each flap, an arcuate stripper cam pivotably attached at its one end to a fixed point, and means for pivotably displacing the stripper cam into a position in which its concave surface engages the cam followers of those flaps which, at any instant during stripping, lie in what is, at that time, the upper part of the basket whereby the latter flaps are pivoted from their normal positions for stripping caked material from said inner surface of the basket.

4,240,914
SELECTIVE PERMEABLE MEMBRANE AND PROCESS FOR PREPARING THE SAME

Akio Iwama; Yasuo Kihara, and Masao Abe, all of Ibaragi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan

Filed Nov. 16, 1978, Ser. No. 961,168
Claims priority, application Japan, Nov. 18, 1977, 52-139383
Int. Cl.[3] B01D *31/00;* B32B *5/18*
U.S. Cl. 210—500.2 11 Claims

1. A selective permeable membrane having a self-supporting property, which comprises a polyimide polymer consisting essentially of a repeating unit of the formula:



wherein R is a divalent organic group wherein the polyimide polymer has an inherent viscosity of about 0.55 to 1.2 measured at 30° C.

4,240,915
DRILLING MUD VISCOSIFIER

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,171
Int. Cl.[3] C09K *7/04*
U.S. Cl. 252—8.5 B 11 Claims

1. In a water-based, clay-free drilling fluid suitable for circulating in a bore hole while drilling the bore hole into subterranean formations including water, a water-loss inhibitor, a weighting agent and a viscosifying agent, the improvement which comprises that said viscosifying agent is an aluminum hydroxide viscosifying agent formed in an aqueous medium by contacting and mixing under a high degree of agitation a water soluble alkali metal aluminate with a water soluble acidic compound selected from the group consisting of an inorganic acid or a salt of a strong acid and a weak base; said aluminate to acidic compound are in a ratio to cause the resultant aqueous medium to have a pH of at least about 8, said viscosifying agent is present in said fluid in from about 0.5 to 10 percent by weight based on the weight of the water present to impart pseudoplastic properties to said fluid and said fluid has a pH of from about 8 to about 10.3.

2. In a water-based, clay-free drilling fluid suitable for circulating in a bore hole while drilling the bore hole into subterranean formations including water, a water-loss inhibitor, a weighting agent and a viscosifying agent, the improvement which comprises that said viscosifying agent is an aluminum hydroxide viscosifying agent formed in an aqueous medium by contacting and mixing under a high degree of agitation a water soluble acidic aluminum compound selected from the group consisting of an aluminum halide, aluminum sulfate and aluminum nitrate with a water soluble base selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide or an alkali metal aluminate; said aluminum compound to base are present in a ratio to cause the resultant aqueous medium to have a pH of at least about 8, said viscosifying agent is present in said fluid in from about 0.5 to 10 percent by weight based on the weight of the water present to impart pseudoplastic properties to said fluid and said fluid has a pH of from about 8 to about 10.3.

4,240,916
POUR POINT DEPRESSANT ADDITIVE FOR FUELS AND LUBRICANTS

Albert Rossi, Warren, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

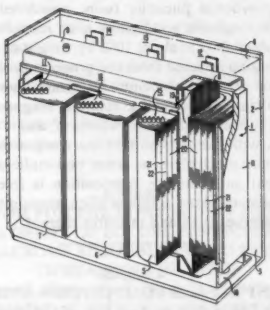
Continuation-in-part of Ser. No. 515,563, Oct. 17, 1974, abandoned. This application Jul. 9, 1976, Ser. No. 704,022
Int. Cl.[3] C10M *1/26*
U.S. Cl. 252—56 D 3 Claims

1. A lubricating oil composition comprising, a major proportion of a mineral lubricating oil, and a pour point depressing amount of about 0.01 to 3.0 wt. % of an oil-soluble pour point depressing copolymer of 1,000 to 30,000 number average molecular weight consisting essentially of about equimolar proportions of maleic anhydride and 1-olefin, said 1-olefin being a mixture comprising from about 25 to 75 mole percent of a straight chain higher olefin and from about 25 to 75 mole percent of a lower olefin, said higher olefin having in the range of 20 to 24 carbon atoms and said lower olefin having 10 to 14 carbon atoms.

4,240,917
TRANSFORMER USING CATALYTICALLY HYDROGENATED BRIGHT STOCK FLUID

Henry A. Pearce, Jr., Stoneboro, and Edward J. Walsh, Hermitage, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1979, Ser. No. 27,639
Int. Cl.[3] H01B *3/22*
U.S. Cl. 336—94 6 Claims



1. A transformer comprising a tank containing a magnetic core and a winding immersed in a fluid which comprises bright stock catalytically hydrogenated to an aromaticity of 5 to 30 percent.

4,240,918
ANTI-SOILING AND ANTI-REDEPOSITION ADJUVANTS AND DETERGENT COMPOSITIONS COMPRISED THEREOF

Alain Lagasse, Creteil, and Bernard Papillon, La Mulatiere, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 2, 1978, Ser. No. 957,058
Claims priority, application France, Nov. 2, 1977, 77 33486
Int. Cl.[2] C11D *7/54, 3/20, 3/26*
U.S. Cl. 252—95 36 Claims

1. An anti-soiling and anti-redeposition adjuvant formulation comprising (i) an anti-soiling and anti-redeposition amount of at least one polymer A, said polymer itself having anti-soiling and anti-redeposition properties, wherein said polymer A is

selected from the group consisting of a hydrophilic polyurethane, a copolyester and mixtures thereof, (ii) at least one solubilizing and dispersing agent B for the said polymer A, and (iii) at least one water repellent C present in an amount sufficient to act as a water repellent for said agent B.

23. A detergent composition comprising a detergent surfactant and the formulation as defined by claim 1.

4,240,919

THIXOTROPIC ABRASIVE LIQUID SCOURING COMPOSITION

Francis E. Chapman, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 29, 1978, Ser. No. 964,318

Int. Cl.³ C11D *3/395, 3/14, 3/37, 17/08*

U.S. Cl. 252—95 **15 Claims**

1. A stable, liquid abrasive cleaning composition comprising:

(a) from about 1 to about 60% by weight of a water insoluble particulate abrasive selected from the group consisting of titanium dioxide, silica sand, calcium carbonate, calcium phosphate, zirconium silicate, diatomaceous earth, quartz, pumice, pumicite, whiting, perlite, tripoli, melamine, urea formaldehyde resins, ground rigid polyurethane foam, feldspar, vermiculite, calcium silicate, aluminum silicate and mixtures thereof;

(b) from 0.1 to about 10% by weight of bleach;

(c) from 0 to about 20% by weight of a non-multivalent stearate surfactant;

(d) from 0 to about 10% by weight of a bleach stable electrolyte capable of maintaining the pH of the composition within the range of 10.5 to 14;

(e) from 5 to about 20% by weight of a light density filler selected from powdered polyethylene, powdered polypropylene, powdered polystyrene, powdered polyester resin, powdered phenolic resin, powdered polysulfide, glass microspheres and hollow glass microballons;

(g) from about 0.05 to about 10% by weight of a multivalent stearate soap selected from the group consisting of aluminum monostearate, aluminum distearate, aluminum tristearate, calcium stearate, zinc stearate, magnesium stearate, barium stearate and mixtures thereof; and

(g) water, with the proviso that the composition contain at least some electrolyte or some non-multivalent stearate surfactant and that the composition is free of bodying agents selected from colloidal silica, atapulgites, smectites, diatomaceous earth and mixtures thereof.

4,240,920

DETERGENT BLEACH COMPOSITION AND PROCESS

Manuel J. de Luque, Worms, Fed. Rep. of Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 27, 1979, Ser. No. 15,677

Claims priority, application Canada, Feb. 28, 1978, 297842

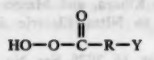
Int. Cl.³ C11D *7/38, 7/18, 7/56*

U.S. Cl. 252—99 **29 Claims**

1. A process for removing stains from cotton fabrics which comprises the steps of (i) treating the fabrics with an aqueous solution of detergent bleach composition, and (ii) drying; wherein both steps take place in darkness and wherein said detergent bleach composition consists essentially of the following components, (a) surfactant, (b) peroxy bleach, and (c) porphine bleach;

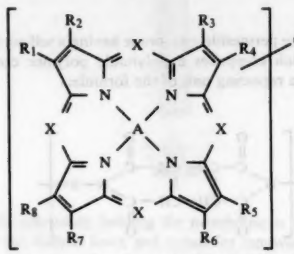
where the surfactant is from 5 to 50 wt. % based on the weight of the composition and is selected from the group consisting of anionic, nonionic, semi-polar, ampholytic and cationic surfactants;

where the peroxy bleach has an available oxygen content of from 0.2 to 5.0 wt. % based on the weight of the composition and is an inorganic peroxyhydrate selected from the group consisting of alkali metal salts of perborates, percarbonates, persulfates, persilicates, perphosphates and perpolyphosphates; urea peroxide; or an organic peroxy acid or anhydride or salt thereof having the general formula



where R is an alkylene group containing from 1 to 20 carbon atoms or a phenylene group and Y is selected from the group consisting of hydrogen, halogen, alkyl and aryl;

where the porphine bleach is from 0.001 to 0.5 wt. % based on the weight of the composition and has the general formula



wherein

each X is (=N—) or (=CY—), and the total number of (=N—) groups is 0, 1, 2, 3 or 4; wherein each Y, independently, is hydrogen or meso substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroaryl; wherein each R, independently, is hydrogen or pyrrole substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroraryl, or wherein adjacent pairs of R's are joined together with orthoarylene groups to form pyrrole substituted alicyclic or heterocyclic rings; wherein A is 2(H) atoms bonded to diagonally opposite nitrogen atoms, or Zn(II), Cd(II), Mg(II), Ca(II), Al(III), Sc(III), or Sn(IV); wherein B is an anionic, nonionic or cationic solubilizing group substituted into Y or R; wherein M is a counterion to the solubilizing groups; and wherein s is the number of solubilizing groups;

wherein,

when B is cationic, M is an anion and s is from 1 to about 8; when B is nonionic, B is polyethoxylate, M is zero, s is from 1 to about 8, and the number of condensed ethylene oxide molecles per porphine molecule is from about 8 to about 50; when B is anionic and proximate, M is cationic and s is from 3 to about 8; when B is anionic and remote, M is cationic and s is from 2 to about 8; and when B is sulfonate the number of sulfonate groups is no greater than the number of aromatic and heterocyclic substituent groups.

4,240,921

LIQUID CLEANING CONCENTRATE

Thaddeus J. Kaniecki, Pompton Plains, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 902,301, May 3, 1978, Pat. No. 4,147,652, which is a continuation-in-part of Ser. No. 750,036, Dec. 13, 1976, abandoned. This application Mar. 28, 1979, Ser. No. 24,632

Int. Cl.³ C11D *1/72, 1/722, 1/825, 7/06*

U.S. Cl. 252—156 **3 Claims**

1. A liquid cleaning concentrate consisting essentially of:

(a) from about 10% to about 35% by weight of alkali metal hydroxide;

(b) from about 10% to about 50% by weight of

(i) a mixture of a first nonionic surfactant which is a polyoxypropylene polyoxyethylene condensate having foam depressing tendencies at less than about 40° C. and

a second nonionic surfactant which is a capped ethoxylated alcohol, the weight of the first surfactant and the second surfactant are about equal; and

(ii) an alkyl glycoside or a glycidyl ether of an alcohol having 12 to 24 carbon atoms or an alkyl phenol; wherein the weight ratio of (ii) and (i) is about 5:1 to about 10:1; and

(c) the balance being water.

4,240,922

PROCESS AND AMINE-SOLVENT ABSORBENT FOR REMOVING ACIDIC GASES FROM GASEOUS MIXTURES

Guido Sartori, Linden, and David W. Savage, Summit, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 768,420, Feb. 14, 1977, Pat. No. 4,100,257. This application Sep. 22, 1977, Ser. No. 835,811

Int. Cl.[2] **C09K** *3/00*

U.S. Cl. 252—189 **15 Claims**

1. An amine-solvent liquid composition, comprising:

(a) an amine mixture comprised of at least 50 mol % of a sterically hindered amine and at least about 10 mol % of a tertiary amino alcohol, wherein said sterically hindered amine contains at least one secondary amino group which is part of a ring and is attached to either a secondary or tertiary carbon atom or a primary amino group attached to a tertiary carbon atom, and

(b) a nonreactive solvent for said amine mixture, said solvent being a member selected from the group consisting of sulfones; sulfoxides; glycols, mono- and diethers thereof; 1,3-dioxo compounds characterized by being a 5- to 6-membered heterocyclic ring; aromatic ethers; aromatic hydrocarbons; pryyolidones; piperidones; and mixtures thereof.

4,240,923

PROCESS AND AMINE-SOLVENT ABSORBENT FOR REMOVING ACIDIC GASES FROM GASEOUS MIXTURES

Guido Sartori, Linden, N.J., and Frederic Leder, Corona Del Mar, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 862,195, Dec. 19, 1977, Pat. No. 4,112,051, and a continuation-in-part of Ser. No. 590,427, Aug. 26, 1975, abandoned. This application May 30, 1978, Ser. No. 911,035

Int. Cl.[2] **C09K** *3/00*

U.S. Cl. 252—189 **25 Claims**

1. An amine-solvent liquid absorbent composition comprising:

(a) a sterically hindered amine characterized as being an amino alcohol compound containing at least one secondary amino group which is part of a ring and is attached to either a secondary or tertiary carbon atom or a primary amino group attached to a tertiary carbon atom, and

(b) a non-aqueous solvent for said amine, said solvent is selected from the group consisting of sulfones; sulfoxides; glycols, mono- and diethers thereof; 1,3-dioxo compounds characterized by being a 5- to 6-membered heterocyclic ring; aromatic ethers; aromatic hydrocarbons; pyrrolidones; piperidones; and mixtures thereof.

4,240,924

COMPOSITIONS CAPABLE OF FORMING AQUEOUS SYSTEMS HAVING PSEUDOPLASTIC PROPERTIES

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,784

Int. Cl.[3] **C09K** *7/04;* **B01J** *13/00*

U.S. Cl. 252—317 **10 Claims**

1. A stable, storable, solid particulate composition capable of dispersing in an aqueous system and causing said aqueous system to exhibit a high degree of pseudoplastic properties consisting essentially of a mixture of a solid, particulate alkali metal aluminate having up to about 10 percent by weight of water associated therewith and a solid, particulate, water soluble inorganic halide or nitrate salt of a metal selected from the group consisting of zinc, iron, aluminum or mixtures thereof, the ratio of alkali metal aluminate to metal salt being sufficient to cause an aqueous system containing said mixture to have an alkaline pH of from at least 8 to 11.

4,240,925

INHIBITION OF PITTING CORROSION

William S. Tait, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 2, 1978, Ser. No. 930,280

Int. Cl.[3] **C23F** *11/16, 11/12, 11/14*

U.S. Cl. 252—389 A **11 Claims**

1. A pitting corrosion inhibiting composition comprising a cathodic corrosion inhibitor and an anodic corrosion inhibitor, said cathodic corrosion inhibitor being a phosphoric acid ester, amide, amide-ester or combination thereof, and said anodic corrosion inhibitor being an organic compound containing at least one member of the class consisting of the carboxylic, sulfonic, sulfate and acidic SH groups.

4,240,926

STERILIZATION INDICATOR

Gerald W. McNeely, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 26, 1979, Ser. No. 15,546

Int. Cl.[3] **C09K** *3/00;* **C01K** *11/16;* **C01N** *21/06, 21/10, 31/22;* **C09D** *11/10*

U.S. Cl. 252—408 **5 Claims**

1. A composition capable of recording steam and dry heat sterilizations and capable of differentiating therebetween, comprising:

(1) thiobarbituric acid and (2) parabanic acid, to form a colored product.

2. A composition capable of recording steam and dry heat sterilizations and capable of differentiating therebetween, comprising:

(1) thiobarbituric acid and (2) a mixture of dimethyl oxalate and urea, to form a colored product.

4,240,927

REACTOR FOR THE CONTINUOUS THERMAL TREATMENT OF SOLIDS, PARTICULARLY CARBONACEOUS ADSORBENTS AND PROCESS OF OPERATING THE SAME

Joachim Karweil, Essen; Josef Degel, Hattingen, and Dietrich Rolke, Frankfurt, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,751

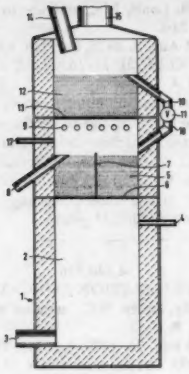
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813227

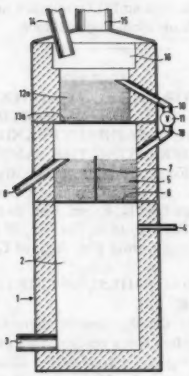
Int. Cl.[3] **B01J** *20/34;* **B01D** *53/08;* **C02F** *1/28;* **C01B** *31/10*

U.S. Cl. 252—411 R **5 Claims**

1. A process for the continuous thermal regeneration of carbonaceous adsorbents in a reactor, said process comprising the steps of admitting into a combustion chamber a volume of air and a quantity of fuel which is greater than required to support combustion, so that the combustion of some of the fuel produces a propellant gas; passing the propellant gas and the excess uncombusted fuel entrained therein upwardly in the reactor for successive travel through a lower fluidizing bed, an intermediate substantially vacant regeneration space, thereafter through an upper fluidizing bed and finally through a top regeneration space from which the propellant gas is then discharged; introducing carbonaceous adsorbent material to be regenerated but not to be combusted into said top regeneration space for entry into said upper fluidizing bed; admitting air into said intermediate regeneration space to cause combustion

therein of the heretofore uncombusted excess fuel entrained in said propellant gas, so as to burn away contaminants which are present in said adsorbent material; passing the overflow of adsorbent material from the upper regeneration space in a path leading to the outside of the reactor and then reverting back into the reactor and connecting with the intermediate regeneration space, for the material to enter into the lower fluidizing bed; and withdrawing the regenerated uncombusted adsorbent material from the intermediate regeneration space to the exterior of the reactor.





2. The process of claim 1 wherein the fuel is gas or oil and is employed in a stoichiometric excess of 10 to 30% relative to the combustion air.

4,240,928

TITANIUM TRICHLORIDE CATALYST AND PROCESS FOR THE PRODUCTION THEREOF

Hiroshi Ueno, Namekawa; Naomi Inaba, Ooi; Tukuo Makishima, Kawagoe; Koh Watanabe, Kunitachi, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 774,964, Mar. 7, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,803

Claims priority, application Japan, Mar. 8, 1976, 51-24121; Jul. 25, 1977, 52-88314

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **24 Claims**

1. A process for the production of a titanium trichloride catalyst composition comprising:

reducing titanium tetrachloride with an alkylaluminum halide of the formula R_nAlX_{3-n}, wherein R is an alkyl group having 1 to 18 carbon atoms, X is a halogen atom, and n is a numeral within the range of $1 \leqq n \leqq 3$, said alkylaluminum halide being in a proporation of about 0.5 to about 5 gram atoms as aluminum per 1 gram atom of titanium in said titanium tetrachloride, at a temperature of about −50° C. to about +30° C. to produce a reduced solids product;

contacting said reduced solids product with a dialkyl ether having alkyl groups of 4 to 5 carbon atoms each together with hexachloroethane at an elevated temperature of about 80° C. to about 90° C. for about 3 to about 7 hours, said hexachloroethane being in a proportion of at least greater than about 0.5 mol per 1 gram atom of titanium in the reduced solids product and said dialkyl ether being in a proportion of at least 1 mol per 1 mol of hexachloroethane; and

recovering the resulting treated reduced solids product as a titanium trichloride catalyst.

4,240,929

POLYMERIZATION OF OLEFINS

Richard E. Dietz, and Oscar D. Nowlin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 15, 1979, Ser. No. 3,439

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **30 Claims**

1. A catalyst composition obtained by milling a magnesium alkoxide with a milled mixture of a magnesium chloride and a titanium tetrahalide.

3. A catalyst composition in accordance with claim 1 wherein a powdered diluent is added to the composition.

5. A catalyst composition in accordance with claim 3 wherein said powdered diluent is selected from the group consisting of polyarylene sulfide.

4,240,930

CATALYST AND PROCESS FOR PRODUCING METHACRYLIC ACID

Sargis Khoobiar, Kinnelon, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Continuation-in-part of Ser. No. 973,354, Dec. 26, 1978. This application Apr. 6, 1979, Ser. No. 27,632

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **1 Claim**

1. A catalyst composition suitable for the vapor-phase oxidation of methacrolein to produce methacrylic acid consisting essentially of the oxides of molybdenum, copper, phosphorus, antimony and cesium and having the formula $Mo_aCu_bP_cSb_dCs_eO_f$, where: a=12; b=0.05–3; c=0.1–5; d=0.1–0.5; e=0–.1–3; and f=value determined by the valence and proportions of the other elements of the formula.

4,240,931
OXIDATION CATALYSTS

Ernest C. Milberger, Solon, and Eunice K. T. Wong, Cleveland, both of Ohio, assignors to Standard Oil Company Ohio, Cleveland, Ohio

Continuation-in-part of Ser. No. 784,003, Apr. 4, 1977, Pat. No. 4,155,920. This application May 1, 1978, Ser. No. 901,888
Int. Cl.[3] B01J *27/24, 29/06, 29/16, 23/10*
U.S. Cl. 252—438 20 Claims

1. A catalyst composition of the formula

$$A_aE_cMo_eSb_fO_x$$

wherein A is at least one element selected from the group consisting of titanium in combination with at least one element selected from the group consisting of zirconium, niobium and tantalum;

E is a member selected from the group consisting of molybdenum, tungsten, magnesium, aluminum, or nickel; and

wherein

a is a number from 0.01 to 6;

c is a number from 0 to 0.2;

e and f are numbers from 1 to 9;

x is a number which satisfies the valence requirements of the other elements present; and

wherein at least some of the molybdenum in the catalyst is maintained at a valence state below +6; and

wherein said catalyst optionally contains one or more elements selected from the group consisting of lithium, silver, cerium, cadmium, cobalt, arsenic, silicon, zinc, germanium, ruthenium, bismuth, platinum, and uranium.

4,240,932
EXCHANGED MORDENITE CATALYSTS AND PROCESSES FOR PRODUCING THE SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jan. 18, 1979, Ser. No. 4,304
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.[3] B01J *29/18*
U.S. Cl. 252—455 Z 4 Claims

1. A process of exchanging sodium mordenite containing sodium, expressed as Na_2O, of substantially greater than 2% of the mordenite on a volatile free basis, which comprises heating said mordenite in an acid solution or an acid solution containing NH_4 or polyvalent cations or mixtures of said cations at a temperature of about 250° F. to about 500° F. and removing mordenite from the solution, said mordenite containing sodium, expressed as Na_2O of less than 2% of the exchanged mordenite on a volatile free basis.

2. The process of claim 1 in which the polyvalent cation is a rare earth cation.

4,240,933
Pd/SiO_2 HYDROGENATION CATALYST SUITABLE FOR H_2O_2 MANUFACTURE

Harry B. Copelin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 948,036, Oct. 2, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,208
Int. Cl.[2] B01J *29/06, 29/12*
U.S. Cl. 252—455 R 16 Claims

1. A catalyst consisting essentially of amorphous silica particles having deposited thereon about 0.05–5 percent by weight based on the weight of silica of at least one oxide, hydroxide or carbonate of a metal selected from zirconium, thorium, hafnium, cerium, and titanium and about 0.1–10 percent by weight based on the weight of silica of palladium metal; the metal oxide, hydroxide or carbonate being deposited before or simultaneously with the palladium metal in the form of its oxide, hydroxide or carbonate.

5. A process for preparing a supported palladium catalyst comprising (1) mixing a water-soluble palladium salt, amorphous silica particles and at least one water-soluble salt of a metal selected from zirconium, thorium, hafnium, cerium, titanium and aluminum, in an aqueous medium at a pH less than 4, the amount of said metal salt being sufficient to cause at least a major portion of the palladium present in solution to attach to the surface of the amorphous silica particles when the palladium salt is subsequently precipitated as an oxide, hydroxide or carbonate of palladium by the addition of base; and (2) adding a base to said mixture raising the pH of the aqueous medium to above about 4 causing the metal and palladium to deposit onto the silica particles as their hydroxides, oxides or carbonates.

4,240,934
REFORMING CATALYST COMPRISING IRIDIUM, ZIRCONIA, AND ALUMINA

Rodney L. Mieville, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,500
Int. Cl.[3] B01J *21/04, 21/06, 23/46*
U.S. Cl. 252—466 PT 4 Claims

1. A catalyst for the reforming of hydrocarbon streams, which catalyst consists essentially of iridium as a hydrogenation component on a support of zirconia and alumina, said support comprising zirconia in an amount that falls within the range having a lower value that is greater than 3 wt.% and an upper value of about 15 wt.% zirconia or in an amount that is at least 60 wt.% zirconia.

4,240,935
KETENE DIMER PAPER SIZING COMPOSITIONS

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 22, 1978, Ser. No. 973,054
Int. Cl.[3] C08L *77/06, 1/02*
U.S. Cl. 260—9 8 Claims

1. As an improved paper sizing composition, a ketene dimer dispersion consisting essentially of said dimer, an anionic dispersing agent selected from the group consisting of sodium lignin sulfonate, the condensation product of formaldehyde and sodium naphthalene sulfonate and mixtures thereof, a cationic resin which is the reaction product of epichlorohydrin with a polymer selected from the group consisting of (a) an aminopolyamide derived from a dicarboxylic acid and a polyalkylene polyamine having two primary amine groups and at least one secondary or tertiary amine group or (b) a condensate of cyanamide or dicyandiamide with a polyalkylene polyamine having the formula $H_2N(C_nH_{2n}NH)_xH$, wherein n is an integer 2 through 8 and x is an integer 2 or more, and water.

4,240,936
AQUEOUS INSULATIVE COATING COMPOSITIONS CONTAINING KAOLIN AND STAPLE FIBERS

William J. Henning, 220 Forest Ave., Cincinnati, Ohio 45215

Filed May 3, 1979, Ser. No. 35,462
Int. Cl.[3] C08L *1/28*
U.S. Cl. 260—17 R 14 Claims

1. An insulative aqueous coating composition containing film-forming solids consisting essentially of kaolin particles in an amount on the order of about 30% to about 90% by weight, staple fibers and a dispersing agent for said solids in the aqueous composition, said kaolin particles having a diameter less than about 50 microns.

4,240,937

ALLOY FIBERS OF RAYON AND AN ALKALI METAL OR AMMONIUM SALT OF AN AZEOTROPIC COPOLYMER OF POLYACRYLIC ACID AND METHACRYLIC ACID HAVING IMPROVED ABSORBENCY

Thomas C. Allen, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 603,483, Aug. 11, 1975, Pat. No. 4,066,584. This application Jan. 3, 1978, Ser. No. 866,797

Int. Cl.³ C08L *1/02*

U.S. Cl. 260—17.4 CL **18 Claims**

1. A highly absorbent cellulosic fiber having incorporated into the cellulosic structure an alkali metal or ammonium salt of an azotropic copolymer of acrylic acid and methacrylic acid in a weight ratio of from about 10:90 to about 90:10.

4,240,938

WATER-SOLUBLE REACTIVE POLYMER MIXTURE

Kurt Kraft; Gerd Walz, both of Wiesbaden; Thaddäus Wirth, Heidenrod, and Ernst-August Theiling, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,566

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811913; Dec. 12, 1978, 2851962

Int. Cl.³ C08G *85/00;* **C09J** *3/12, 3/14*

U.S. Cl. 260—18 EP **10 Claims**

1. A water-soluble reactive binder, characterised by a combination of at least three of the components

(a) at least one halogen-free polycarboxylic acid compound;

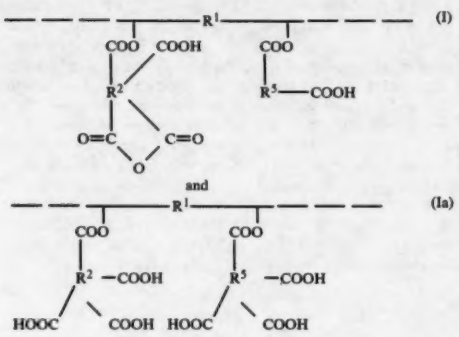
(b) at least on salt-forming substance selected from the group consisting of alkali metal, alkaline earth metal and quaternary ammonium salts, organic bases and ammonia;

(c) at least one component selected from the group consisting of

(c1) a polymer containing OH groups; and

(c2) an epoxide compound,

wherein the components (a) to (c2) are present as such or at least partially in chemically bonded form, which binder contains at least one reaction product of one of the formulae



(I)

and

(Ia)

based on at least three of the components (a) to (c2), wherein

R^1 represents a group derived from at least one component (c1) selected from the group consisting of (α) a polymer containing OH groups, in the form of (α1) polyesters, (α2) polymers, both with an OH number of 20 to 300, (α3) phenolic resins with an OH number of 100 to 800, and (c2) an epoxide compound;

R^2 represents a group derived from an at least tetrabasic carboxylic acid with a COOH group in the o-position relative to the ester group;

R^5 represents a group derived from an at least dibasic carboxylic acid with a COOH group in the o-position relative to the ester group, and R^5 may have the same meaning as R^2;

and the anhydride groups in formulae (I) and (Ia) are present as such or are at least partially replaced by at least one of the groups COOH and ester groups and the COOH groups are present as such or are replaced at least partially by ester groups, and wherein the free COOH groups are present in an amount of from 1 to 100% in the form of a salt of component (b).

4,240,939

WOOD FINISHING COMPOSITION

Sam Kostic, 744 Kilkeel Pl., North Vancouver, British Columbia, Canada (V7N 2X1)

Filed Feb. 21, 1979, Ser. No. 13,017

Int. Cl.³ C08L *93/02;* **C09G** *1/10*

U.S. Cl. 260—22 TN **8 Claims**

1. A wood finishing composition comprising

about three parts of volume of an alcoholic solution of white shellac;

from about one part of about two parts by volume of a solution of an oil modified polyurethane resin; and

about one part by volume of a drying oil.

4,240,940

WATER CLEAN UP AEROSOL PAINT

Ramesh C. Vasishth, Danville, and Robert S. Wang, Concord, both of Calif., assignors to Envirosol Systems International, Ltd., Orinda, Calif.

Filed Feb. 16, 1979, Ser. No. 13,331

Int. Cl.³ B67B *7/00;* **C09D** *3/64, 3/72*

U.S. Cl. 260—22 R **6 Claims**

1. In an aerosol container having propellant therein, an improved paint formulation in said container comprising: about 15–35 weight percent of a water soluble film forming resin, about 15–30 weight percent of a water soluble solvent for said resin, about 25–45 weight percent of a water insoluble solvent for said resin, and not more than about 8 weight percent of water.

4,240,941

COATING COMPOSITIONS

Richard J. Jablonski, and Denis R. Pauze, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 538,080, Jan. 2, 1975, abandoned. This application Jul. 11, 1978, Ser. No. 923,728

Int. Cl.³ C08L *67/00, 75/06*

U.S. Cl. 260—29.2 TN **18 Claims**

1. A coating composition selected from the group consisting of polyester hydantoins, polyester urethanes and mixtures thereof, said composition being reacted with a compound selected from the group consisting of an amine, ammonia and ammonium hydroxide to form a colloid in water.

4,240,942

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS OR SOLUTIONS OF ISOCYANATE POLYADDITION PRODUCTS

Wolfgang Wenzel, Bergisch-Gladbach; Walter Meckel, Neuss, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,674

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734576

Int. Cl.³ C08J *3/08;* **C08L** *75/04*

U.S. Cl. 260—29.2 TN **14 Claims**

1. A process for the preparation of aqueous dispersions or solutions of isocyanate polyaddition products, characterized in that oligourethanes

(a) which have an average molecular weight of less than about 15,000,

(b) which contain from about 0-120 milliequivalents of chemically fixed ionic groups per 100 g of solid content and/or from about 0-25% by weight, based on the total weight of the oligourethane, of chemically fixed ethylene oxide units $—CH_2—CH_2—O—$ within a polyether chain and/or from about 0-30% by weight, based on the total weight of the oligourethane, of external emulsifiers which are not chemically fixed, the total quantity of the above mentioned hydrophilic groups or external emulsifiers being sufficient to ensure the dispersibility or solubility of the oligourethanes in water, and

(c) which have end groups selected from the group consisting of:

(i) primary or secondary aminic amino groups prepared from the reaction of primary or secondary diamines in which the pKb values for the two amino groups in an aqueous medium at 25° C. differ from each other by a factor of at least about 10^3 with an isocyanate terminated prepolymer;

(ii) oxazolidine end groups which decompose into aminic amino groups upon mixing the oligourethane with water; and

(iii) semicarbazide end groups prepared by reacting hydrazine, hydrazine hydrate or N-C_1–C_4-alkyl substituted hydrazines with an isocyanate terminated prepolymer are reacted in the aqueous phase with a hydrophobic chain lengthening agent which is at least difunctional and which undergoes an addition reaction or condensation reaction with the amino or semicarbazide end groups to effect chain lengthening of the oligourethanes.

4,240,943

TEXTILE FINISHING COMPOSITION

Eiichi Sugawara, Kawaguchi; Takao Endoh, Iwatsuki; Satoshi Shioume, Ageo; Tomio Kuroki, and Kazuhiro Teramae, both of Ohtsu, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Feb. 27, 1978, Ser. No. 881,742

Int. Cl.³ C08L *61/22;* **D06M** *15/54, 15/52*

U.S. Cl. 260—29.4 R **8 Claims**

1. A textile finishing composition which comprises

(i) a water dispersible urethane prepolymer having free or heat-activatable masked terminal isocyanate groups

(ii) a glyoxal-amide adduct or bis (ϵ-hydroxyethyl) sulfone at a ratio of 80 to 5:20 to 95.

4,240,944

EMULSION COMPOSITION AND METHOD FOR USE IN TREATING GLASS FIBERS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 12, 1979, Ser. No. 11,454

Int. Cl.³ C08L *23/12*

U.S. Cl. 260—29.6 NR **7 Claims**

1. A size composition for treating glass fibers comprising:

(a) an aqueous emulsion of an isotactic carboxylated polypropylene and amorphous carboxylated polypropylene,

(b) coupling agent,

(c) a film former, and

(d) lubricant.

4,240,945

SOLDER MASK COMPOSITION

Albert Gabrick, 2118 Tree Ridge Cir., Brea, Calif. 92621

Filed Jan. 31, 1979, Ser. No. 8,177

Int. Cl.³ C09D *3/52, 3/66*

U.S. Cl. 260—21 **19 Claims**

1. A composition useful as a solder masking coating which consists essentially of:

(a) a film former comprising:

(1) from 25 to about 40 weight percent of an alkyd resin of a polyester prepolymer extended with from about 25 to about 70 weight percent fatty acid;

(2) from 18 to about 27 weight percent of an alkylated amino resin selected from the class consisting of methylol-melamine and methylol-urea condensates etherified with alkanols of 1 to about 6 carbons;

(3) from 30 to about 45 weight percent Panamint earth having a particle size passing a screen size from 20 to 325 mesh, and weight contents of from 21 to 35 percent silicon, 15 to 28 percent aluminum, 2 to 3 percent calcium, and 1 to 2 percent iron, and a porosity of 45 percent; and

(4) from 2 to about 5 weight percent of a hydrocarbon polymer having a melting point no greater than about 150° C.; and

(b) sufficient organic solvent to provide a viscosity no greater than about 9,000 centipoises.

4,240,946

METHOD OF PREPARING A BITUMINUOUS BINDER AND A CONSTRUCTION MATERIAL CONTAINING THE SAME

Rudolf Hemersam, Vienna, Austria, assignor to Bunzl & Biach Aktiengesellschaft, Vienna, Austria

Continuation-in-part of Ser. No. 612,576, Sep. 11, 1975, abandoned. This application Jan. 16, 1979, Ser. No. 3,884

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—28.5 AS **35 Claims**

1. A method for preparing a bituminous, polyolefin-containing binder for a road construction material containing dispersed solid additives of a predominantly inorganic nature, which comprises mixing and homogenizing molten bitumen and polyethylene in a hot state while melting and dissolving the polyethylene in the bitumen to form a binder mass, the bitumen-polyethylene binder mass being homogenized at a temperature between 260° C. and 310° C. until a significant reduction of the viscosity of the binder mass occurs which exceeds a decrease of the viscosity of said mass attendant upon a mere rise to said temperature of said mass.

4,240,947

CROSS-LINKED ELASTOMERIC POLYESTER LATICIES

John C. Falk, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,562

Int. Cl.³ C08L *67/02, 67/06;* **C08G** *63/76*

U.S. Cl. 260—29.2 E **3 Claims**

1. A process for preparing a cross-linked polyester latex consisting of

A. Preparing a solution comprising from 95 to 80 parts by weight of a water-immiscible organic solvent, from 5 to 20 parts by weight of an aliphatic polyester elastomer and from 0.5 to 5 wt%, based on polyester, of an organic peroxide;

B. Mixing said solution with an equal volume of water containing from 1 to 10 wt%, based on polyester, of a surfactant;

C. Passing said mixture through a homogenizer to form an emulsion;

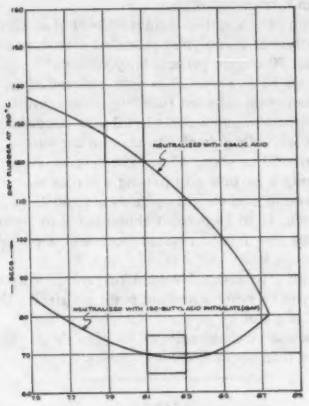
D. Heating said emulsion to remove said solvent; and

E. Further heating said emulsion to cross-link said polyester.

4,240,948
ACCELERATED RESOLE BINDER

Rodney M. Huck, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1979, Ser. No. 99,048
Int. Cl.[3] C08L 61/10
U.S. Cl. 260—29.3 5 Claims



1. A resole resin composition comprising an aqueous solution of a low resole resin with a number average molecular weight from 150 to 300 and, as curing accelerator therefore, from 0.5 to 10 percent by weight, based on the resin weight of C_1 to C_4 alkyl partial ester of an aromatic polycarboxylic acid.

4,240,949
POLYMERIC COMPOSITIONS AND PROCESS FOR THEIR PRODUCTION

Alfred Ecker, Vienna, Austria, assignor to OMV Aktiengesellschaft, Vienna, Austria

Filed Oct. 16, 1978, Ser. No. 951,588
Claims priority, application Austria, Oct. 21, 1977, 7549/77
Int. Cl.[3] C08K 5/36
U.S. Cl. 260—30.8 R 14 Claims

1. Polymeric compositions of olefinic polymers obtained by radical polymerization or additive reaction, characterized in that they contain 10 to 90 percent by weight of sulfur modified by means of at least one plasticizer and a thiophilic, nitrogen-containing compound as a viscosity regulator.

4,240,950
STABILIZED FILLER SUSPENSIONS IN POLYOLS

Wulf von Bonin, Leverkusen; Peter Vehlewald, Leichlingen, and Hans-Walter Illger, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,715
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834623
Int. Cl.[3] C08K 9/04; C08L 75/04
U.S. Cl. 260—37 N 6 Claims

1. A process for the production of non-disintegrating suspensions of inorganic fillers in polyhydroxyl compounds of the type used for the production of polyurethanes, comprising reacting a suspension of an inorganic filler in a polyhydroxyl compound with from 0.1 to 2%, by weight, of a polyisocyanate, based on the weight of the suspension, at a temperature of from 30° to 200° C.

4,240,951
RHEOLOGICAL CONTROL OF POLYESTER-STYRENE RESIN COMPOSITIONS

William F. Moll, Jr., Summit, and Thomas D. Thompson, III, Flemington, both of N.J., assignors to Yara Engineering Corporation, Elizabeth, N.J.

Filed Dec. 23, 1975, Ser. No. 643,797
Int. Cl.[3] C08K 3/00
U.S. Cl. 260—40 R 9 Claims

1. The method of controlling the rheological properties of polyester-styrene resin compositions comprising the steps of:
(a) reacting dimethyl benzylhydrogenated tallow amine in varying amounts with a smectite in a water system to determine an optimum level of amine on said smectite to provide a desired viscosity in said polyester-styrene resin system and a thixotropic index above about 2.5, without regard to the ion exchange capacity of the smectite,
(b) reacting the amine in the determined optimum with said smectite to provide a desired optimum level of dimethyl benzylhydrogenated tallow amine on said smectite,
(c) recovering the resulting reaction product from the water system, and
(d) adding the recovered reaction product to a polyester-styrene resin mixture to produce a desired level of viscosity.

4,240,952
METHOD OF MAKING CONCRETE FROM FLY ASH

Clarence E. Hulbert, Jr., 928 N. York, Muskogee, Okla. 74401; Liang-Tseng Fan, and Mufit Akinc, both of Manhattan, Kans., assignors to Clarence E. Hulbert, Jr., Muskogee, Okla.

Filed Jan. 15, 1979, Ser. No. 3,589
Int. Cl.[2] C04B 7/14
U.S. Cl. 260—42.13 6 Claims

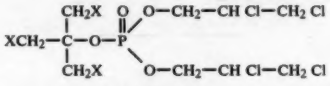
1. A method of making concrete which comprises the steps of mixing together a quantity of a cementitous material which includes fly ash as a major ingredient therein, a quantity of aggregate, a quantity of gypsum equal to about 2% by weight of the fly ash and water to form an initial mix, thereafter adding calcium chloride in an amount equal to about 3% by weight of the fly ash, further mixing and pouring the same to set.

4,240,953
HALOALKYL PHOSPHATES

James A. Albright, Ann Arbor, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 660,672, Feb. 23, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,477
The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.
Int. Cl.[3] C08K 5/53; C08F 9/09
U.S. Cl. 260—45.7 P 12 Claims

1. A compound of the formula



wherein each X is independently selected from the group consisting of chlorine, bromine and hydrogen.

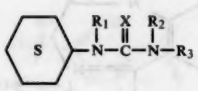
4,240,954
POLYMERS STABILIZED AGAINST DEGRADATION BY ULTRAVIOLET RADIATION

Joseph A. Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,552
Int. Cl.[3] C08K 5/16
U.S. Cl. 260—45.75 F 13 Claims

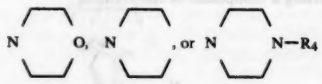
1. A method of stabilizing a polyolefin against degradation by ultraviolet radiation which comprises adding to said poly-

olefin a stabilizingly effective amount of a compound of the formula (I):



(I)

wherein X represents O or S; R_1 is cyclohexyl; R_2 represents hydrogen, a cycloalkyl radical of 4 to 6 carbon atoms, an alkyl radical of 1 to 18 carbon atoms, an alkenyl radical of 3 to 12 carbon atoms, or a hydroxyalkyl radical of 2 to 12 carbon atoms; R_3 represents the same groups as R_2 with the proviso that it may not be hydrogen, or R_2 and R_3 taken together with the N to which they are attached form



wherein R_4 represents alkyl of 1 to 8 carbon atoms.

4,240,955

OCTADECYLAMMONIUM ALPHA-OCTAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,252
Int. Cl.³ C07F 11/00
U.S. Cl. 260—45.75 R **4 Claims**

1. Octadecylammonium alpha-octamolybdate characterized by major X-ray diffraction peaks at "d" spacings of 17.7 A, 11.9 A and 6.81 A.

2. A smoke retarded composition comprising a vinyl chloride or vinylidene chloride polymer together with a smoke retardant amount of octadecylammonium alpha-octamolybdate characterized by major X-ray diffraction peaks at "d" spacings of 17.7 A, 11.9 A and 6.81 A.

4,240,956

TRI(DIBROMONEOPENTYL) ANTIMONITE FLAME RETARDANTS

Edward D. Weil, Hasting-on-Hudson; Alfred K. Jung, Ridgewood, and Joseph Silberberg, Brooklyn, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 20, 1979, Ser. No. 50,244
Int. Cl.³ C08K 5/59; C07F 9/90
U.S. Cl. 260—45.75 B **8 Claims**

1. A process for preparing solid tri(dibromoneopentyl) antimonite which comprises contacting in a reaction medium; (1) antimony triester, and (2) dibromoneopentyl glycol; wherein the mole ratio of dibromoneopentylene glycol to antimony triester is about 3 to 2; said contact being at a temperature and for a time effective to transesterify the antimony triester.

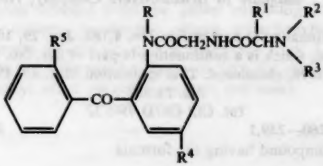
4,240,957

DIPEPTIDE DERIVATIVES AND THEIR PRODUCTION

Kentaro Hirai, Kyoto; Teruyuki Ishiba, Takatsuki; Kazuyuki Sasakura, Tondabayashi, and Hirohiko Sugimoto, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 601,134, Aug. 1, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 775,646
Claims priority, application Japan, Aug. 6, 1974, 49-90565; Aug. 6, 1974, 49-90566
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R **19 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein R represents methyl, ethyl, isopropyl, butyl, pentyl, cyanomethyl, cyanoethyl, cyanopropyl, cyanobutyl, dimethylaminoethyl, diethylaminoethyl, or diethylaminopropyl; R^1 represents hydrogen, methyl, ethyl, isopropyl, butyl, pentyl, benzyl, phenethyl or phenylpropyl; R^2 represents hydrogen, methyl, ethyl, isopropyl, butyl, pentyl, benzyl, phenethyl, phenylpropyl, glycyl-glycyl, or glycyl; R^3 represents hydrogen, methyl, ethyl, isopropyl, butyl or pentyl; R^4 represents chlorine; and R^5 represents hydrogen, chlorine or fluorine, and an acid addition salt thereof.

4,240,958

PROCESS OF PREPARING SULFURIZED OLEFINS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,602
Int. Cl.³ C07G 17/00
U.S. Cl. 260—139 **11 Claims**

1. A process for preparing a sulfurized olefinic compound comprising reacting a C_2–C_{20} olefin and a sulfur halide in the presence of a catalytic amount of iodine, separating the intermeiate adduct thus produced from the reaction medium and thereafter sulfurizing it with an alkali metal sulfide.

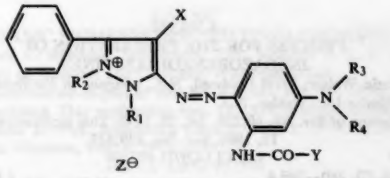
4,240,959

1,2-DIALKYL-3-PHENYL-5-[4-(N-ALKYL OR N,N-DIALKYL)AMINO-2-BENZOYLAMINO-PHENYLAZO]PYRAZOLIUM DYESTUFFS

Michel M. L. Champenois, Le Mesnil Esnard, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Oct. 3, 1978, Ser. No. 948,273
Claims priority, application France, Oct. 21, 1977, 77 31712
Int. Cl.³ C09B 29/08, 45/22; D06P 3/70
U.S. Cl. 260—147 **4 Claims**

1. Dyestuff of the formula:



in which R_1 and R_2 represent alkyl containing 1 to 4 carbon

atoms, R_3 represents hydrogen, methyl or ethyl, R_4 represents methyl or ethyl, X represents hydrogen or nitro, Y represents phenyl or phenyl substituted by one or two halogen atoms or nitro groups, and $Z^{\ominus}$ represents an anion.

4,240,960

TRIMETHYLSILYL SUBSTITUTED PENICILLINS

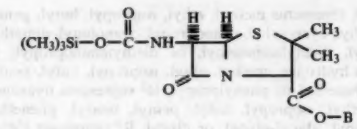
Derek Walker, Jamesville; Herbert H. Silvestri, Dewitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 4,780, Jan. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,704, Dec. 18, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 21,852

Int. Cl.³ C07D *499/32*

U.S. Cl. 260—239.1 **8 Claims**

1. A compound having the formula



wherein B is an easily cleavable ester protecting group.

4,240,961

SYNTHESIS OF 2-PIPERAZINONES AND 1,4-DIAZA-2-KETO-CYCLOHEPTANES

John T. Lai, Broadview Hgts., Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 29, 1979, Ser. No. 43,294

Int. Cl.³ C07D *243/08, 241/18*

U.S. Cl. 260—239.3 R **9 Claims**

1. A method for preparing a polysubstituted 2-keto-1,4-diazacycloalkane compound comprising reacting a diamine selected from the group consisting of an acyclic 1,2-diamine and an acyclic 1,3-diamine, with a cyanohydrin acetate selected from the group consisting of an acyclic cyanohydrin acetate and a cyclic cyanohydrin acette, in the presence of (i) alkali metal hydroxide, and (ii) a haloform; forming a piperazinone when said 1,2-diamine is reacted, and a 1,4-diazepin-2-one when said 1,3-diamine is reacted; and, recovering said compound.

4,240,962

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

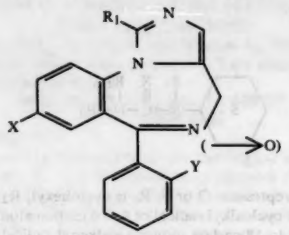
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 60,258, Jul. 25, 1979. This application Apr. 11, 1980, Ser. No. 139,325

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.6 **1 Claim**

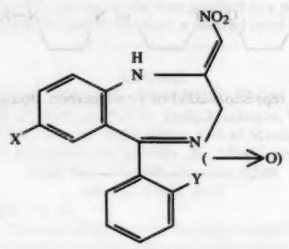
1. A process to produce a compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl, Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl and R_1 is hydrogen.

which comprises

(A) reacting a compound of the formula



wherein X and Y are as above with a nitrosating agent

(C) reacting the product of (A) with sodium borohydride

(D) reacting the product of (C) with formaldehyde and pivalic acid in 1,2 dichloroethane to form an oxadiazine and an imidazoline N-oxide

(E) reacting the oxadiazine of (D) with acetic acid at relux

(F) reacting the imidazoline N-oxide of (D) with acetic acid or sodium methoxide in methanol at reflux.

4,240,963

PREPARATION OF INDOLENINES

Harald Laas, Maxdorf; Axel Nissen, Leimen; Hans-Joachim Opgenorth, Frankenthal; Horst Scheuermann, Ludwigshafen; Hans-Richard Mueller, Bobenheim-Roxheim, and Wolfgang Schulte, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

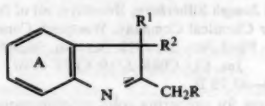
Filed Aug. 9, 1979, Ser. No. 64,981

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834607

Int. Cl.³ C07D *209/08, 263/22*

U.S. Cl. 260—319.1 **9 Claims**

1. A process for the preparation of an indolenine of the formula:

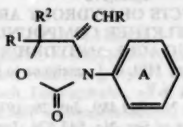


(I)

wherein R, R^1 and R^2 are C_1–C_9 alkyl or C_1–C_9 alkenyl and R^1 and R^2 may also be linked and ring A is optionally substituted with at least one substituent selected from the group consisting of chlorine, bromine, nitro, cyano, C_1–C_4 alkoxycarbonyl,

alkylsulfonyl, alkyl and alkoxy or a fused benzene ring may be attached to said A ring, comprising:

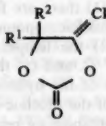
heating a compound of the formula:



(II)

in the presence of a Lewis acid and an alkali metal halide or alkaline earth metal halide.

5. The process as claimed in claim 1, wherein said compound of formula II is prepared by reacting a compound of the formula:



III

with a compound of the formula:

IV

and is then reacted further, without isolation, as set forth in claim 5 to give said indolenine compound.

4,240,964

2-(O-HYDROXYPHENYL)-PYRROLE AND PROCESS FOR ITS PREPARATION

Horst Koenig, Ludwigshafen; Albrecht Franke, Wachenheim; Fritz-Frieder Frickel, Ludwigshafen; Wolfgang Steglich, and Norbert Engel, both of Bonn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,906

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835439

Int. Cl.³ C07D *207/44*

U.S. Cl. 260—326.5 M **2 Claims**

1. 2-(o-Hydroxyphenyl)-pyrrole.

4,240,965

UNSYMMETRICAL PYRROLINO BENZYL QUATERNARY COMPOUNDS

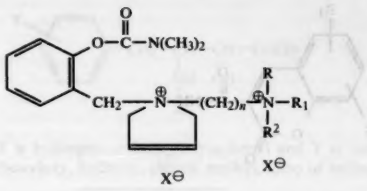
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 26, 1968, Ser. No. 701,015

Int. Cl.³ C07D *207/24*

U.S. Cl. 260—326.41 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the group consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, tetraphenylboronate, and hydrogen sulfate; wherein n is selected from 5–16, and wherein R, R_1, R_2 are radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl.

4,240,966

CYCLIC KETALS OF α-OXIMINO-CYCLOALKANONES

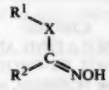
Milorad M. Rogic', Whippany; Michael D. Swerdloff, Parsippany, and Timothy R. Demmin, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 807,692, Jun. 17, 1977, abandoned, which is a division of Ser. No. 600,666, Jul. 31, 1975, Pat. No. 4,045,422, which is a continuation-in-part of Ser. No. 460,836, Apr. 15, 1974, abandoned. This application Dec. 13, 1978, Ser. No. 968,934

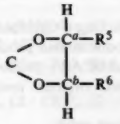
Int. Cl.³ C07D *317/44, 317/10*

U.S. Cl. 260—340.5 R **1 Claim**

1. Cyclic alpha-oximinocyclohexanone ketals characterized by the formula



wherein: together R^1, R^2 are hydrocarbon moieties forming part of a C_6 monocyclic structure and X is



wherein R^5, R^6 independently are hydrogen, phenyl, C_1–C_{10} alkyl or in combination with C^a, C^b form a cyclohexyl radical.

4,240,967

ORGANIC PIGMENTS DERIVED FROM COUMARIN

Richard C. Bingham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

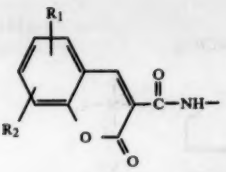
Continuation-in-part of Ser. No. 877,462, Feb. 13, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 65,863

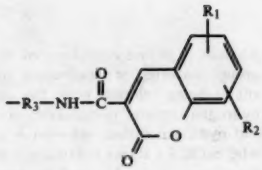
Claims priority, application Canada, Feb. 9, 1979, 321189; United Kingdom, Feb. 9, 1979, 4633/79

Int. Cl.³ C07D *311/08*

U.S. Cl. 260—343.45 **8 Claims**

1. A compound of the formula:



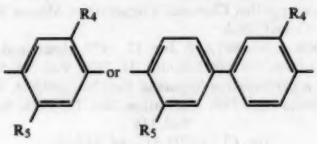


where

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine or nitro; and

R_3 is



where R_4 and R_5 may be the same or different and are each hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine.

4,240,968

PROCESS FOR ISOLATING AND PURIFYING DIPHENOL BY-PRODUCTS

Clayton B. Quinn; Clayton W. Reinitz, and William Hilakos, all of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 26, 1979, Ser. No. 33,392

Int. Cl.³ C07D *311/04*

U.S. Cl. 260—345.2 **15 Claims**

1. A process for obtaining a chroman-I concentrate from a mixture of BPA by-products, said process comprising

slurrying a mixture of BPA by-products in a solvent system containing an inert, organic member until a solid is formed;

collecting said resultant solid;

washing said solid with said inert, organic member of said solvent system to form a white powder; and,

drying said powder.

4,240,969

SYNTHESIS OF MENTHOFURAN

T. L. Ho; Zia U. Din, and Sean G. Traynor, all of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,182

Int. Cl.³ C07D *307/79, 303/12*

U.S. Cl. 260—346.22 **13 Claims**

1. A process for synthesizing menthofuran comprising:

epoxidizing isopulegol under epoxidizing conditions to form isopulegol epoxide,

oxidizing the hydroxyl of said isopulegol epoxide under oxidizing conditions to form isopulegone epoxide, and

cyclodehydrating said isopulegone epoxide under cyclodehydrating conditions to form menthofuran.

4,240,970

REACTION PRODUCTS OF HYDROXY AROMATIC OR ALKYLPHENYLETHER COMPOUNDS AND ALKENYLSUCCINIC ACID, ANHYDRIDE, OR ESTER

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 709,489, Jul. 28, 1976, which is a continuation-in-part of Ser. No. 542,474, Jan. 20, 1975, abandoned. This application Dec. 18, 1979, Ser. No. 105,005

Int. Cl.³ C07D *307/60*

U.S. Cl. 260—346.74 **12 Claims**

1. A product of reaction obtained by reacting an alkenylsuccinic acid, anhydride or ester, wherein the alkenyl group is a C_{25}–C_{300} unsaturated hydrocarbon, and a hydroxy-aromatic compound and the alkyl-substituted members thereof, the reaction being run such that (1) there are from about 0.1 to about 10 moles of hydroxyaromatic compound per mole of the alkenylsuccinic compound, (2) the temperature is at from about −20° C. to about 225° C. and (3) there is a catalyst present to direct the addition of the hydroxyaromatic compound to the alkylene group of the succinic compound.

10. A product of reaction obtained by reacting an alkenylsuccinic acid, ester or anhydride, wherein the alkenyl group is a C_{25}–C_{300} unsaturated hydrocarbon, and an alkyl phenyl ether, the reaction being run such that (1) there are from about 0.1 to about 10 moles of the alkyl phenyl ether per mole of the alkenylsuccinic compound, (2) the temperature is at from about −20° C. to about 225° C. and (3) there is a catalyst present.

4,240,971

EPOXY-SULFONYLAZIDE COMPOUNDS

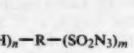
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 483,471, Jun. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 301,003, Oct. 26, 1972, abandoned, which is a division of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, Jul. 18, 1969, Pat. No. 3,608,604. This application Dec. 31, 1975, Ser. No. 645,761

Int. Cl.³ C07D *303/34;* C07H *15/04;* C08F *224/00*

U.S. Cl. 260—348.43 **9 Claims**

1. An epoxy-sulfonylazide compound having the general formula



where R is a polyvalent organic radical, R′ is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and aralkyl radicals, and n and m are integers from 1 to 100.

4,240,972

CONTINUOUS PROCESS FOR CONTACTING OF TRIGLYCERIDE OILS WITH AN ACID

Theodore K. Mag, King City, and Margaret P. Reid, Don Mills, both of Canada, assignors to Canada Packers Limited, Toronto, Canada

Filed Dec. 19, 1978, Ser. No. 971,041

Int. Cl.³ C11B *3/04;* C09F *5/02*

U.S. Cl. 260—424 **9 Claims**

1. In a continuous process of contacting crude triglyceride oils with an acid to remove phosphatides and heavy metals, the improvement comprising:

continuously introducing the acid into a stream of heated oil and immediately subjecting the resulting mixture to intensive mixing action such that the acid is dispersed through-

out the oil in the form of droplets smaller than about 10 microns in diameter and the phosphatides are substantially instantaneously reacted with the acid.

4,240,973

N-CYCLOHEXYL-N-METHOXYACETOACETAMIDE

Friedrich Linhart, Heidelberg; Bjoern Girgensohn, Mannheim, and Bernd Zeeh, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,775

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832102

Int. Cl.³ C07C *83/10*

U.S. Cl. 260—453 RW 1 Claim

1. N-Cyclohexyl-N-methoxyacetoacetamide.

4,240,974

FIRE RETARDANT SULFONATE COMPOUND

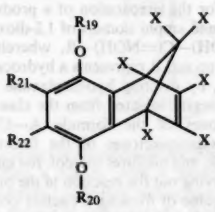
Julian R. Little, 4 Kathleen Ct., Wayne, N.J. 07470; Walter Nudenberg, 26 Sunset Rd., West Caldwell, N.J. 07006, and Yong S. Rim, 311 Redwood Ave., Paterson, N.J. 07522

Division of Ser. No. 851,989, Nov. 16, 1977, Pat. No. 4,174,451, which is a division of Ser. No. 789,006, Apr. 20, 1977, Pat. No. 4,080,408, which is a division of Ser. No. 745,065, Nov. 26, 1976, Pat. No. 4,058,568, which is a division of Ser. No. 486,482, Jul. 8, 1974, Pat. No. 4,009,200, which is a division of Ser. No. 329,177, Feb. 2, 1973, Pat. No. 3,875,236, which is a division of Ser. No. 80,747, Oct. 14, 1970, abandoned. This application Dec. 19, 1978, Ser. No. 970,914

Int. Cl.³ C07C *143/68*

U.S. Cl. 260—456 P 3 Claims

1. A compound of the formula:



(VII)

wherein R_{19} and R_{20} are the same or different and each may be SO_2–R_{24} wherein R_{24} is lower alkyl, an aromatic nucleus of the phenyl series or a halogen substituted aromatic nucleus of the phenyl series; and R_{21} and R_{22} may be the same or different and each may be hydrogen, lower alkyl, or halogen substituted lower alkyl; and X is halogen.

4,240,975

BESTATIN

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomohisa Takita, Asaka; Rinzo Nishizawa, and Tetsushi Saino, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

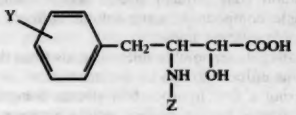
Continuation of Ser. No. 868,571, Jan. 10, 1978, abandoned, which is a division of Ser. No. 809,835, Jun. 24, 1977, Pat. No. 4,189,604, which is a continuation-in-part of Ser. No. 800,820, May 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 703,863, Jul. 9, 1976, abandoned. This application Sep. 26, 1979, Ser. No. 79,777

Claims priority, application Japan, Jul. 21, 1976, 51-85992

Int. Cl.³ C07C *69/96, 101/72*

U.S. Cl. 260—463 27 Claims

1. A compound having the formula



wherein Z is hydrogen or benzyloxycarbonyl and Y is benzyloxycarbonyloxy, hydroxy, chloro, methyl, nitro or amino.

4,240,976

MANUFACTURE OF 3-PENTENE NITRILE

Robert J. Benzie, and Dhafir Y. Waddan, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 874,225, Feb. 1, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,550

Claims priority, application United Kingdom, Apr. 4, 1977, 14064/77

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ C07C *120/02*

U.S. Cl. 260—465.3 9 Claims

1. In a process for the manufacture of 3-pentenenitrile which process comprises reacting at a temperature within the range −25° C. to 200° C. a mixture of butadiene and hydrogen cyanide which is substantially completely devoid of oxygen and in the presence as catalyst of a cuprous halide complex selected from the group consisting of cuprous chloride, cuprous bromide or cuprous iodide with an organic nitrile, the catalyst being used in a catalytic amount of 0.0005 to 0.1 mole per mole of butadiene, the molar ratio of butadiene to hydrogen cyanide being 2:1 to 1:4 and the catalyst complex being formed by mixing the said cuprous halide with the said organic nitrile before or at the same time as it is mixed with the butadiene and hydrogen cyanide, the improvement wherein the process is carried out in the presence of further chloride ion, bromide ion, iodide ion or mixtures thereof provided by an inorganic source of halide ion additional to said catalytic amount of cuprous halide.

4,240,977

2-CYANOETHYL ISOCYANIDE DICHLORIDE

Gunther Beck, Leverkusen; Gerhard Dankert, Cologne, and Fritz Döring, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 964,049, Nov. 27, 1978. This application Aug. 17, 1979, Ser. No. 67,650

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753204

Int. Cl.³ C07C *121/43*

U.S. Cl. 260—465.5 R 1 Claim

1. 2-Cyanoethyl isocyanide dichloride.

4,240,978

PROCESS FOR SULFONATION OF GAS OILS

Roy C. Berg, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 7, 1979, Ser. No. 101,296

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 P 6 Claims

1. A process for the production of petroleum sulfonates useful in crude oil production which comprises the steps of:

(a) passing a feed stream comprising a mixture of aromatic and paraffinic hydrocarbonaceous compounds having a molecular weight between about 250 and about 450, SO_3, and a hereinafter specified recycle stream into a sulfonation zone maintained at sulfonation conditions and effecting the sulfonation of at least a portion of said aromatic

hydrocarbonaceous compounds, and thereby forming a sulfonation zone effluent stream which comprises said paraffinic compounds, water-soluble sulfonic acids and oil-soluble sulfonic acids;

(b) separating water-soluble sulfonic acids from the sulfonation zone effluent stream by decantation;

(c) admixing a first hydrocarbon stream comprising light hydrocarbons having boiling points between 200° and 400° F. with the remaining second portion of the sulfonation zone effluent stream and separating the resultant admixture by a second decantation into a denser phase comprising water-soluble sulfonic acids and a less dense phase comprising oil-soluble sulfonic acids, said light hydrocarbons and said paraffinic hydrocarbons having a molecular weight between about 250 and 450;

(d) passing a stream of the less dense phase produced in the second decantation through a saponification zone maintained at saponification conditions including the presence of an aqueous solution of a basic chemical and thereby forming a saponification zone effluent stream comprising said light hydrocarbons, said paraffinic hydrocarbons and oil-soluble petroleum sulfonates;

(e) extracting the oil-soluble sulfonates from the saponification zone effluent stream by contacting the saponification zone effluent stream with an aqueous solution of an alkyl alcohol and thereby forming an extract stream comprising oil-soluble sulfonates and a raffinate stream comprising said light hydrocabons and said paraffinic hydrocarbon;

(f) recovering as a product the oil-soluble sulfonates from the extract stream;

(g) fractionating the raffinate stream in a fractionation zone maintained at fractionation conditions into a light fraction comprising said light hydrocarbons and a heavy fraction comprising said paraffin hydrocarbons;

(h) admixing the light fraction with the second portion of the sulfonation zone effluent as at least a portion of the first hydrocarbon stream of step (c);

(i) passing the heavy fraction through a reforming zone operated at reforming conditions effective to convert at least a portion of said paraffinic hydrocarbons into aromatic hydrocarbons having a molecular weight between 250 and about 400, and thereby forming a reforming zone effluent stream; and,

(j) passing the reforming zone effluent stream into the sulfonation zone as the recycle stream of step (a).

4,240,979

AROYLUREAS

Annegrit Baumann, Mannheim; Karl Kiehs, Lampertheim; Heinrich Adolphi, Limburgerhof, and Karl-Heinz Koenig, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

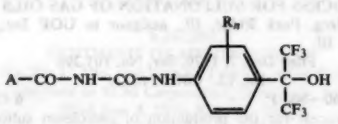
Filed Aug. 30, 1979, Ser. No. 71,552

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839462

Int. Cl.³ C07C *127/22*; A01N *9/20*

U.S. Cl. 564—44 **5 Claims**

1. An aroylurea of the formula



where A denotes a phenyl radical which is mono- or polysubstituted by halogen, linear or branched alkyl of 1 to 4 carbon atoms, or linear or branched alkoxy of 1 to 4 carbon atoms, R denotes linear or branched alkyl of 1 to 4 carbon atoms or linear or branched alkoxy of 1 to 4 carbon atoms, and n denotes one of the integers 0,1 and 2.

4,240,980

PROCESS FOR THE MANUFACTURE OF N,N,N′,N′-TETRAACETYLETHYLENEDIAMINE

Günther Müller-Schiedmayer, and Rudolf Aigner, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,258

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816174; Feb. 21, 1979, 2906606

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—153 **8 Claims**

1. A process for the manufacture of N,N,N′,N′-tetraacetylethylenediamine by acetylation of N,N′-diacetylethylenediamine with acetic anhydride at a temperature of from 120° to 170° C., which comprises

(a) using N,N′-diacetylethylenediamine and acetic anhydride in a weight ratio of from 1:1 to 1:10,

(b) stopping the acetylation before the reaction equilibrium between N,N′-diacetylethylenediamine and N,N,N′,N′-tetraacetylethylenediamine is attained,

(c) purifying the brown-colored reaction mixture after or before the separation by crystallization of N,N,N′,N′-tetraacetylethylenediamine, in order to remove the dyeing impurities, and

(d) recycling the purified and recovered reaction components not completely reacted to the acetylation.

4,240,981

PROCESS FOR THE PREPARATION OF 1,2-DIOXIMES

Riekert Kok, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 7, 1979, Ser. No. 18,386

Claims priority, application United Kingdom, Mar. 8, 1978, 9210/78

Int. Cl.³ C07C *131/00*

U.S. Cl. 564—259 **14 Claims**

1. In the process for the preparation of a product mixture containing anti, syn, and amphi isomers of 1,2-dioximes of the formula A—C(=NOH)—C(=NOH)—R, wherein A represents an aromatic group and R represents a hydrocarbyl group or a hydrogen atom, by reacting hydroxylamine with a hydroxyiminoketone reactant selected from the class consisting of hydroxyiminoketones of the formula A—C(=O)—C(=NOH)—R, hydroxyiminoketones of the formula A—C(=NOH)—C(=O)—R, and mixtures thereof, the improvement which comprises carrying out the reaction in the presence of a nickel compound capable of forming a chelate complex with the 1,2-dioxime, the mole ratio of said nickel compound to said hydroxyiminoketone reactant being in the range of from about 0.1 to 2.0, thereby obtaining a product mixture containing an increased proportion of the anti isomer of the dioximes.

4,240,982

NOVEL ONIUM SURFACTANTS

Robert F. Harris, Midland, Mich., and Earl H. Wagener, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 895,558, Apr. 12, 1978, which is a division of Ser. No. 416,308, Nov. 15, 1973, Pat. No. 4,093,663. This application May 29, 1979, Ser. No. 43,868

Int. Cl.³ C07C *91/26, 91/38*

U.S. Cl. 564—285 **13 Claims**

1. An onium surfactant corresponding to the formula $X[(CH_2CH_2O)_mCH_2\text{–}R\text{–}CHR'\text{–}Q\oplus A\ominus]_n$, wherein X is the hydrophobic portion of a n-valent radical derived by the removal of n-atoms of active hydrogen from an organic compound, said organic compound being a nonionic surfactant having a hydrophilic-lipophilic-balance of from 1 to about 30 and having the structural formula $X[(CH_2CH_2O)_mH]_n$; m is an integer of at least 1 and is the same in each of the above formulae; R is a divalent aromatic hydrocarbon radical of from 6 to about 14 carbon atoms, the chain length of which can be inter-

rupted by oxygen or sulfur atoms; R' is hydrogen or methyl and is methyl only when R is m- or p-phenylene; $Q\oplus$ is a quaternary ammonium radical corresponding to the formula $-NR_2R_3R_3$, wherein R_2, R_3 and R_4 are each independently hydrocarbon radicals or inertly-substituted hydrocarbon radicals and wherein the total number of carbon atoms in R_2, R_3 and R_4 does not exceed 30; $A\ominus$ is a compatible anion; and n is an integer of from 1 to 5 and is the same in each of the above formulae.

4,240,983

MONOHALOGENATED KETONES

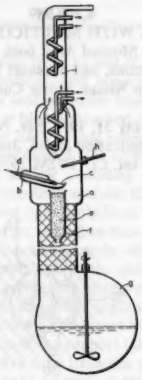
Rüdiger Schubart, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 891,563, Mar. 29, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,224

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716895

Int. Cl.³ C07C *45/63*

U.S. Cl. 568—316 **11 Claims**



1. In a process for the preparation of a monohalogenoketone by contacting a ketone with a halogen, the improvement which comprises vaporizing said ketone in a vessel and causing the vapors thereof to pass upwardly through a defined reaction zone into a condensation zone, condensing said ketone vapors in said condensation zone and causing liquid ketone in said condensation zone to drip downwardly into a collection zone, collecting said condensed liquid ketone in said collection zone, directing halogen against the liquid ketone while in said collection zone while in the presence of water and with the exclusion of light and passing the ketone after contact with said halogen in the presence of water and with the exclusion of light into said vessel by directing condensed non-halogenated thereagainst, the reaction of said halogen with said ketone being conducted at a temperature of −20° to 120° C. employing a mol ratio of ketone to halogen of 1 to 50:1.

4,240,984

PROCESS FOR PRODUCING AROMATIC ALDEHYDES

Paolo deWitt, Turin, and Maria O. Tinti, Rome, both of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Italy

Filed Jan. 18, 1979, Ser. No. 4,448

Claims priority, application Italy, Jan. 27, 1978, 47813 A/78

Int. Cl.³ C07C *45/41*

U.S. Cl. 568—435 **10 Claims**

1. Process for preparing benzaldehyde or benzaldehyde substituted with; lower alkyl radicals, lower alkoxy groups, chlorine or bromine; starting from the corresponding aromatic acid, which comprises the following steps:

(a) reacting said aromatic acid at 0°–15° C. and at atmospheric pressure with ethyl or isobutyl chlorocarbonate, in the presence of an anhydrous base and an anhydrous solvent, inert in respect to the reagents, and obtaining the corresponding anhydride;

(b) hydrogenating directly to aldehyde the anhydride of step (a) for 6–8 hours at atmospheric pressure and at room temperature, in the presence of a hydrogenation catalyst comprising 10% by weight palladium on barium sulphate, said hydrogenation catalyst being partially poisoned before use thereof by a solution of sulphur and quinoline in an inert solvent containing between 2.5 and 6×10^{-4} by weight in sulphur and between 2 and 5×10^{-4}% by weight in quinoline.

4,240,985

ALDEHYDE SYNTHESIS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 26, 1979, Ser. No. 15,369

Int. Cl.³ C07C *47/02*

U.S. Cl. 568—483 **10 Claims**

1. A process of producing an alkyl-substituted alkanal which comprises contacting a 2,2-di-lower-alkyl tetrahydropyran bearing two hydrogen atoms in the sixth position with a strong acid selected from the group consisting of phosphoric acid, polyphosphoric acid, benzene sulfonic acid, toluene sulfonic acid, hydrochloric acid, and sulphuric acid at a temperature within the range of about 50° C. to about 200° C. at which said 2,2-di-lower-alkyl tetrahydropyran is cleaved and a 1,5-hydride shift occurs so that an alkyl-substituted alkanal is produced.

4,240,986

PROCESS FOR THE SEPARATION OF ORTHO-CHLORONITROBENZENE

James W. Priegnitz, Elgin, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 23, 1979, Ser. No. 14,656

Int. Cl.³ C07C *79/12*

U.S. Cl. 568—937 **29 Claims**

1. A process for separating ortho-chloronitrobenzene from a feed mixture comprising ortho-chloronitrobenzene and at least one other isomer of chloronitrobenzene, which process comprises contacting said mixture at adsorption conditions with an adsorbent comprising a type X or type Y zeolite containing at the exchangeable cationic sites one or more cations selected from the group consisting of Groups IA, IIA and the transition metals of the Periodic Table of Elements, selectively adsorbing ortho-chloronitrobenzene to the substantial exclusion of the remaining isomers, and thereafter recovering high-purity ortho-chloronitrobenzene.

4,240,987

CHEMICAL PROCESS

Trevor I. Martin, Burlington; Paul Szabo, Islington, both of Canada, and Sam R. Turner, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,895

Int. Cl.³ C07C *25/26*

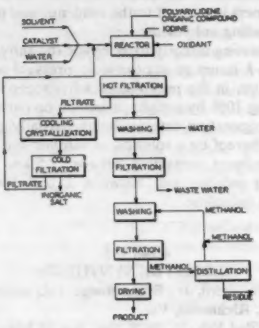
U.S. Cl. 570—206 **17 Claims**

1. A process for producing diiodinated polyarylidene compounds in high yield and purity which comprises:

(a) reacting in a suitable reactor, a polyarylidene compound with iodine in the presence of an oxidant, said oxidant being unreactive with said compound in a reaction medium comprising a solvent for said compound, water and a catalyst;

(b) recovering the reaction medium for reuse in step (a) by the steps of:

(i) removing the diiodinated aromatic compound;
(ii) precipitating the spent oxidant; and
(iii) removing the precipitated spent oxidant from the reaction medium; and



(c) recycling the reaction medium to the reactor and repeating step (a).

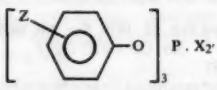
4,240,988

METHOD OF STABILIZATION OF KINETICALLY CONTROLLED TRIARYL PHOSPHITE-HALOGEN COMPOUNDS

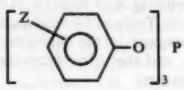
Alpheus Bingham, Jr., Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,648
Int. Cl.³ C07F 9/14
U.S. Cl. 260—989 **22 Claims**

1. A method of preventing, or decreasing the rate of, the conversion of halogenating compounds of the general formula

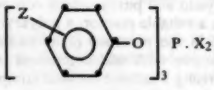


which compounds are the kinetically controlled products of the reaction of equivalent amounts of chlorine or bromine and a triaryl phosphite of the formula

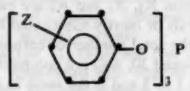


in a substantially anhydrous inert organic solvent, to the corresponding thermodynamically stable compounds, which method comprises mixing said halogenating compounds in an inert organic solvent with a stabilizing amount of a tertiary amine base, wherein in the above formulas X is Cl or Br, and Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy.

10. A method of stabilizing halogenating compounds of the general formula



wherein X is Cl or Br and Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy, which compounds are the kinetically controlled products of the reaction of equivalent amounts of a triaryl phosphite of the formula



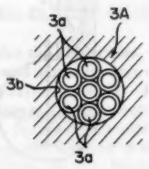
and chlorine or bromine in a substantially anhydrous inert organic solvent, which comprises mixing said halogenating compounds in an inert organic solvent with a stabilizing amount of a halide complexing agent selected from the group consisting of phosphorous pentachloride, aluminum trichloride, antimony pentachoride, stannic chloride and bromine; with the limitation that when X is Cl the halide complexing agent is not bromine.

4,240,989

CARBURETOR WITH MULTICONDUIT NOZZLE

Akinobu Moriyama; Motomi Arai, both of Yokosuka; Katsushi Yoshikawa, Yokohama, and Masaaki Saito, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 31, 1979, Ser. No. 44,326
Claims priority, application Japan, Jun. 2, 1978, 53-75947[U]
Int. Cl.³ F02M 29/00
U.S. Cl. 261—78 R **7 Claims**



1. A carburetor assembly for an internal combustion engine, comprising:

an intake passage for supplying a combustible mixture of fuel and air to the engine;

a venturi provided in said intake passage;

a float chamber for maintaining the fuel at a predetermined level;

a narrow fuel passge communicating with said float chamber;

an air bleed communicating with said fuel passage;

an emulsion tube extending from said air bleed into said fuel passage, said emulsion tube including means for producing a homogenous mixture of the fuel from said float chamber with the air from said air bleed in such a way that the air from said air bleed emerges from said emulsion tube as fine bubbles; and

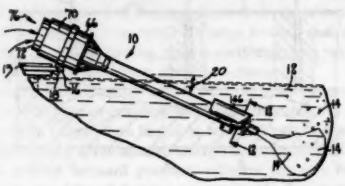
a nozzle having one end thereof communicating with said venturi and the other end thereof communicating with said fuel passage, said nozzle supplying said homogenous mixture of fuel and air bubbles to said venturi; and said nozzle having along at least the part of its length near the venturi a multiconduit structure comprising a plurality of passageways extending axially along a substantial portion of said nozzle and having a diameter so that said fine bubbles in the fuel are positively broken up to produce much smaller bubbles in the fuel when the bubbles in the fuel have passed through said multiconduit structure, without substantial increase in flow resistance.

4,240,990

AERATION PROPELLER AND APPARATUS

Harold G. Inhofer, Hopkins, and John E. De Veau, Minnetonka, both of Minn., assignors to Aeration Industries, Inc., Chaska, Minn.

PCT No. PCT/US 79/00224, § 371 Date Apr. 10, 1979 § 102(e) Date Apr. 21, 1979, PCT Pub. No. WO 79/00958, PCT Pub. Date Nov. 15, 1979.
This PCT application filed Apr. 10, 1979, Ser. No. 30,949
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—87 30 Claims



1. A propeller mechanism for use with an aeration apparatus comprising:

a support tube extending from an end of a rotatable conduit of an aeration apparatus, said support tube having gas outlet means below said propeller blades;

a plurality of propeller blades attached to the outer surface of said support tube, each of said propeller blades extending in the axial dimension of said support tube;

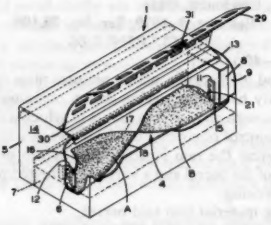
each propeller blade having a leading end, a tail end, an outer edge and an impelling surface, the outer edge at the leading end extending outwardly from the outer surface of said support tube at an angle less than 90°, said impelling surface facing in the direction in which said propeller mechanism is adapted to rotate, said impelling surface having a rake at a given axial position along a respective propeller blade defined by the angle at which the impelling surface is disposed with respect to a radius extending normal from the axis of the support tube, said rake changing to a more positive rake from the axial position at the leading end to the axial position at the tail end.

4,240,991

HUMIDIFIER

Melvin H. Shaub, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 3, 1979, Ser. No. 63,579
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—92 9 Claims



1. An evaporator type humidifier adapted to be positioned in an air stream from an air-circulating system, said humidifier comprising

(a) a housing having a water receptacle in the lower portion thereof and having an air inlet port and a humidified air outlet port;

(b) means mounted within said housing to supply water to said water receptacle and to maintain the water therein at a predetermined level; and

(c) a single elongated air-water contact means horizontally mounted in said housing with its longitudinal axis transverse to the flow path of an air stream passing between the air inlet port and the air outlet port in the housing and being adapted to be rotated around its longitudinal axis by the direct impingment of the air stream thereon, said air-water contact means comprising a one-piece structure twisted at its midpoint region into substantially the shape of a propeller with the ends thereof being in planes which are substantially perpendicular to each other, the longitudinal axis of said structure extending from one of the ends thereof through its midpoint to the other end, said air-water contact means being so positioned in said housing that its rotation causes at least a portion of each longitudinal half thereof on opposite sides of its midpoint region to alternately pass through the water in the water receptacle.

4,240,992

TECHNIQUE FOR FABRICATING RADIATION SENSITIVE DOSIMETERS

Edward M. Petrie, Pittsburgh; John G. Seidel, McCandless, and Patrick E. Felice, Lincoln Heights, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,813
Int. Cl.² C09K *11/42*
U.S. Cl. 264—21 6 Claims

MIXING RADIATION SENSITIVE PHOSPHOR PARTICLES AND A BINDER DISPERSION IN WATER TO FORM AN AQUEOUS EMULSION
SPREADING THE EMULSION ON A SMOOTH SURFACE OF A SUPPORT MEMBER TO FORM A UNIFORM EMULSION COATING
HEATING THE EMULSION COATING TO REMOVE THE WATER AND FORM A DRY COATING
SINTERING THE DRY COATING TO FORM A CONTINUOUS DOSIMETER FILM
REMOVING THE DOSIMETER FILM FROM THE SUPPORT MEMBER

1. A method of fabricating a peelable alpha responsive radiation dosimeter film, comprising the steps of,

mixing thermoluminescent radiation sensitive phosphor particles and a binder particle dispersion in water to form an aqueous emulsion of phosphor particles and binder particles in suspension, said aqueous emulsion having a viscosity of 30 centipose or greater,

spreading the emulsion onto the surface of a support member to form a uniformly thick emulsion coating, said thickness being such that the removal of water results in a dosimeter coating of a thickness which renders the dosimeter coating responsive to alpha radiation,

heating the emulsion coating to remove the water and form a dry dosimeter coating of phosphor particles and binder particles of a thickness which renders the dosimeter coating responsive to alpha radiation,

sintering the dry dosimeter coating to form a continuous alpha responsive dosimeter film, said binder being such that said dosimeter film is a peelable dosimeter film, and

peeling said alpha responsive dosimeter film from said support member.

4,240,993

MULTI-LAYER FILM CONTAINING A LAYER OF CROSSLINKED ETHYLENE/VINYL ALCOHOL COPOLYMER

Joseph Z. Sun, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 7, 1978, Ser. No. 931,635
Int. Cl.[3] B29C *25/00*
U.S. Cl. 264—22 11 Claims

1. A process for producing a multi-layer film, comprising the steps of:

providing a multi-layer structure having a substrate layer having a flexibility suitable for packaging material and a precursor layer of a copolymer of an olefin and a vinyl ester;

crosslinking said precursor layer to produce a crosslinked precursor layer with at least one crosslink per weight average molecule;

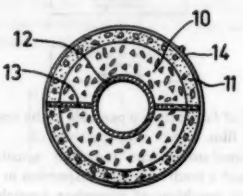
hydrolyzing said crosslinked precursor layer to produce a multi-layer film having a substrate layer and a copolymer layer of an olefin and vinyl alcohol.

4,240,994

METHOD FOR MANUFACTURING A BUILDING ELEMENT

Tor A. I. Ottenholm, 18, Hasselgatan, S-194 00, Upplands Väsby, Sweden

Continuation-in-part of Ser. No. 886,371, Mar. 14, 1978, abandoned. This application Jan. 24, 1979, Ser. No. 6,152
Claims priority, application Sweden, May 23, 1977, 7706024; Nov. 24, 1977, 7713325; Jul. 4, 1978, 7807539
Int. Cl.[3] B29H *5/26, 19/00;* B29G *7/00;* B05D *7/00*
U.S. Cl. 264—26 6 Claims



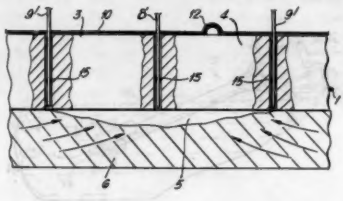
1. A method of manufacturing an insulating element comprising substantially completely coating pieces of bark in particulate form with only a thin layer of a liquid glue material, placing the coated pieces of bark in a mold which is operative to apply pressure to the coated pieces to compress said coated pieces of bark into an insulating element of desired dimensions, arranging said mold and said liquid glue coated pieces in a manner wherein said mold acts as the plates of a capacitor and said glue coated pieces of bark act as the dielectric of said capacitor during said compression step, and unifying the coated pieces of bark in said mold by applying high frequency electrical energy across the plates of said capacitor during said compression step thereby to heat all of the coated bark pieces in said mold substantially simultaneously while pressure is being applied thereto.

4,240,995

METHODS FOR PREPARING NATURAL AND ARTIFICIAL STRUCTURES

James Milne, Wigton, England, assignor to BICC Limited, London, England

Filed Aug. 8, 1978, Ser. No. 931,989
Claims priority, application United Kingdom, Aug. 12, 1977, 33933/77
Int. Cl.[3] E01C *23/10*
U.S. Cl. 264—36 10 Claims



1. A method of introducing a hardenable material in a flowable state into voids in at least a part of an artificial or natural structure adjacent an exposed surface of the structure, which structure overlies a highly porous layer, which method comprises forming at least one extractor hole through said part and into said underlying highly porous layer in the vicinity of at least one void into which hardenable material is to be introduced; forming at least one injector hole through said part and into said underlying highly porous layer at a position spaced from the void; closely fitting a flexible fluid-impermeable covering over the exposed surface, the covering having adjacent its boundary edges an endless hollow wall that surrounds and opens towards the covered surface; sealing boundary edges of the covering to the structure to form a substantially fluid-tight enclosure incorporating the hollow wall; evacuating air and any other fluid from the hollow wall and from the extractor hole and introducing hardenable material in a flowable state into the injector hole; as hardenable material appears at the outlet of the extractor hole, terminating evacuation of air and other fluid from this extractor hole and introducing hardenable material into the extractor hole; and, when hardenable material is being introduced into all injector and extractor holes, gradually bringing to a stop evacuation of air and other fluid from the hollow wall as the hardenable material in said cracks and other voids sets.

4,240,996

PROCESS FOR CONTROLLING PART DENSITY IN FAST INJECTION MOLDING MACHINES

Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunkar Laboratories, Inc., Cincinnati, Ohio

Filed Apr. 9, 1979, Ser. No. 28,100
Int. Cl.[3] B29F *1/06*
U.S. Cl. 264—40.1 12 Claims

1. A method of charging, with a uniform mass of material, a molding cavity having an orifice which communicates, via a mold passage, with an injection barrel in which a ram reciprocates under control of a drive means between a fixed forward position, whereat the ram bottoms with its tip proximate the forward end of the barrel and a variable retracted position, said method comprising:

introducing material into said barrel;

retracting said ram to a specified retraction point to provide a specified amount of material between said ram tip and the forward end of said barrel;

advancing said ram in a forward direction through a full stroke until said ram bottoms with its tip proximate the forward end of said barrel to thereby inject into said mold cavity via said mold orifice and passage a charge of material equal in mass to said specified amount, said ram ad-

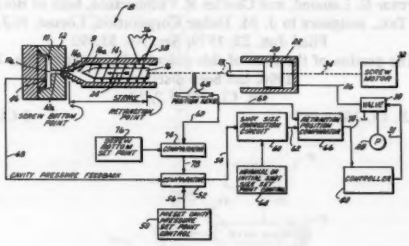
vance being at a speed designed to complete said full stroke in approximately 1.5 seconds or less;

measuring the pressure of said injected material at the end of said stroke when said ram bottoms;

comparing the measured cavity pressure at the end of said stroke against a preset desired cavity pressure correlated to a desired charge of predetermined mass and developing an error signal correlated to the difference therebetween; and

automatically modifying said specified retraction point, and hence the length of said stroke, in response to said error signal to return said measured cavity pressure at the end of said stroke toward said preset desired cavity pressure and in turn restore the successive charge toward said desired charge of predetermined mass notwithstanding variations in material density from charge-to-charge.

7. A method of charging, with a uniform mass of material, a mold cavity having an orifice which communicates, via a mold passage, with an injection barrel in which a ram reciprocates under control of a drive means through a stroke of fixed length between a fixed forward position, whereat the ram bottoms with the forward tip of the ram proximate the forward end of the barrel, and a fixed retracted position, said method comprising:



introducing a specified amount of material into said barrel forward of said ram tip;

advancing said ram in a forward direction through a full stroke of fixed length until said ram bottoms with its tip proximate the forward end of said barrel to thereby inject into said mold cavity via said mold orifice and passage a charge of material equal in mass to said specified amount, said ram advance being at a speed designed to complete said full stroke in approximately 1.5 seconds or less;

measuring the pressure in said cavity at the end of said stroke when said ram bottoms;

comparing the measured cavity pressure at the end of said stroke against a preset desired cavity pressure correlated to a desired charge of predetermined mass and developing an error signal correlated to the difference therebetween; and

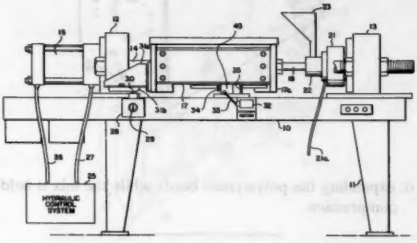
automatically modifying said specified amount of material introduced into said barrel forward of said ram tip in response to said error signal to return said measured cavity pressure at the end of said fixed length stroke toward said preset desired cavity pressure and in turn restore the successive charge toward said desired charge of predetermined mass notwithstanding variations in material density from charge to charge.

4,240,997

EXTRUSION TECHNIQUE WITH RAM SPEED CONTROL

Edward R. Jex, 475 Hickory Lance, Berwyn, Pa. 19312

Division of Ser. No. 646,897, Jan. 6, 1976, Pat. No. 4,141,678.
This application Jun. 23, 1978, Ser. No. 918,436
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.³ B29F *3/06*
U.S. Cl. 264—40.5 **29 Claims**



1. In a machine for extruding material by means of a ram which propels the material through and out of the open end of a die, the machine having means for applying forces to the ram to move the ram alternately along a first path toward the die and a second path away from the die,

the improvement comprising:

means operatively associated with said force applying means for controlling the force applying means to move the ram over the end portion of the first path at a substantially constant speed,

said control means having means for compensating for variations in back pressure from the material so as to maintain the ram speed substantially constant despite such variations.

11. In the process of extruding thermosetting material using a die, a ram movable along a first path toward the die to propel the material through the die, and along a second path away from the die, and external heating means for supplying heat to the die which cooperates with the heat produced by the ram pressure to soften the material as it is propelled through the die,

the improvement which comprises:

controlling the force applied to the ram to move the ram over the end portion of the first path at a substantially constant speed, and

compensating for variations in back pressure from the material to maintain the ram speed substantially constant despite such variations.

4,240,998

PROCESS FOR THE PRODUCTION OF COMPOSITE FOAMED MATERIAL

Seymour Lichter, 137 Fairway Dr., and Frank P. Nold, Rte. 2, Box 60, both of New Castle, Ind. 47362

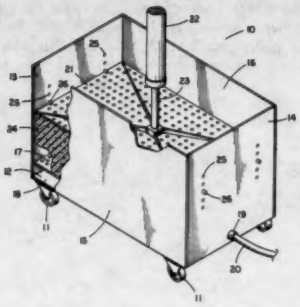
Continuation-in-part of Ser. No. 878,720, Jan. 17, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,523
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.4 **13 Claims**

1. A process for producing a composite foamed material which comprises the steps of:

a. combining into a mix from about 4% to about 15% of expandable polystyrene beads, from about 6% to about 25% of a binder and from about 60% to about 90% of fragments of resilient, open-celled material;

b. compressing the mix within a mold to a density of from about 5 to about 30 lbs/ft^3;

c. curing the binder while the mix is held in compression; and



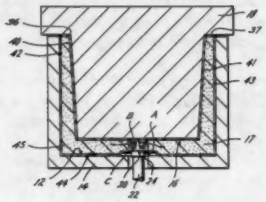
d. expanding the polystyrene beads while the mix is held in compression.

4,240,999

METHOD FOR INTRODUCING MULTI-COMPONENT FOAM REACTANTS INTO MOLD FORM INVOLVING THE USE OF A FOAMING SPACER

Joseph A. Decker, Jr., Katy, Tex., assignor to Igloo Corporation, Houston, Tex.

Filed Apr. 9, 1979, Ser. No. 28,120
Int. Cl.³ B29D 27/04
U.S. Cl. 264—46.5 **5 Claims**



1. A method for introducing foam into a mold having an aperture in its bottom and having walls enclosing a space within the mold, the method comprising the steps of

placing the mold on a turntable,

positioning a foaming spacer having a plurality of openings therethrough within the mold so that one opening of the foaming spacer overlies the aperture of the mold and so that the foaming spacer maintains the separation between the walls of the mold,

rotating the turntable so that the mold with the foaming spacer in place is in position to receive a foam head of a foaming machine,

inserting the foam head forcefully through the aperture of the mold and into the foaming spacer, so that the foam head is held in sealing contact with the foaming spacer,

injecting foam through the head and through the openings of the foaming spacer into the space within the mold,

maintaining the head in position in the foaming spacer long enough for the foam to activate and set,

removing the head from the foaming spacer and from the aperture of the mold, and

rotating the turntable and leaving the mold containing the foam on the turntable while it rotates long enough for the foam to cure.

4,241,000

PROCESS FOR PRODUCING POLYCRYSTALLINE CUBIC ALUMINUM OXYNITRIDE

James W. McCauley, Wakefield, and Normand D. Corbin, Lynn, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Wasington, D.C.

Filed Aug. 24, 1978, Ser. No. 936,447
Int. Cl.³ C01B 21/00; C01F 7/00
U.S. Cl. 264—65 **3 Claims**

1. A method of making sintered, single phase, polycrystalline cubic aluminum oxynitride with 70–100% of theoretical density which displays isotropic optical, thermal and electrical properties, and shows essentially no chemical or physical property change after heating in air at 1100° C. which comprises in sequence the steps of

(a) compacting a mixture of fine grained powders of Al_2O_3 and 30 (±1) to 40 (±1) mole percent of AlN, by isostatic pressing of the mixture at a pressure of at least 25,000 psi,

(b) heat treating at a temperature of 1200° C. for 24 hours said compacted mixture in an oxidation free environment to a density of about 1.73 gm/cc, and

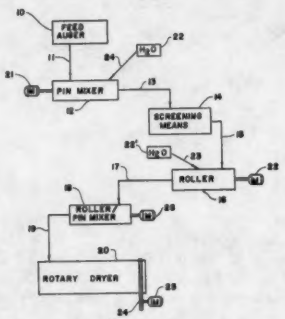
c. heating the mixture at a temperature above 1800° C. to effect reaction and sintering densification but below the temperature at which a liquid grain boundry phase forms.

4,241,001

PROCESS FOR PRODUCING PELLETIZED PIGMENTARY MATERIALS

Trevor G. Lamond, and Charles R. Cuthbertson, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Jun. 22, 1979, Ser. No. 51,092
The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.
Int. Cl.³ B01J 2/12
U.S. Cl. 264—117 **1 Claim**



1. A process for making densified pellets of kaolin clay, talc or mixtures thereof of high bulk density, good handling and bulk flow properties, and low moisture content consisting essentially of:

(a) providing substantially dry, finely divided, pigmentary material comprising a member selected from the group consisting of kaolin clay or talc or mixtures thereof to be pelletized to be fed to pin mixing means;

(b) feeding said substantially dry, finely divided, pigmentary material to said pin mixing means;

(c) mixing said finely divided, pigmentary material in said pin mixing means;

(d) adding a quantity of water in the form of a fine spray of water to the substantially dry, finely divided, pigmentary material in an amount sufficient to bring the total moisture content of the finely divided pigmentary material to from about 17% to about 26% by weight based on the weight of said dry pigmentary material during mixing in said pin

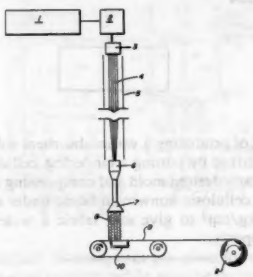
mixing means and working said moistened, pigmentary material in said pin mixing means;
(e) passing said pigmentary material from said pin mixing means on to screening means;
(f) screening said pigmentary material in said screening means to establish the pellet size;
(g) passing said pigmentary material from said screening means into a roller means for forming densified pellets of said screened pigmentary material and forming pellets of said screened pigmentary material therein and further pelletizing and polishing said pigmentary material in said roller means;
(h) passing said pelletized pigmentary material from said roller means into a rotary dryer means for drying said pellets; and
(i) drying said pellets to a moisture content of less than about 1% by weight based on the weight of said dry pigmentary material.

4,241,002

PROCESS FOR PRODUCING HOMOGENEOUS CURLY SYNTHETIC POLYMER FIBERS

Jack R. Knox, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 712,845, Aug. 9, 1976, abandoned. This application May 24, 1978, Ser. No. 909,161
Int. Cl.³ D01D *5/088, 5/12, 5/22*
U.S. Cl. 264—168 **1 Claim**



1. A process for producing a fine denier, homogeneous, crystalline fiber having at least two turns per linear centimeter by extruding, at a temperature from 200°–325° C., several strands of fiber from a slowly crystallizing fiber-forming melt through a spinneret, said melt comprising a synthetic polymer composition comprising a resinous polymer of propylene having a crystallizing temperature range of not less than 10° C., which process comprises:
(a) applying a longitudinal tensile force to said fiber at a temperature above said crystallization temperature range of said polymer;
(b) orienting said fiber by said longitudinal tensile force;
(c) maintaining said tensile force at least through said crystallization temperature range; while uniformly controlling the rate of axially symmetric cooling of said fibers by reducing convection current effects.

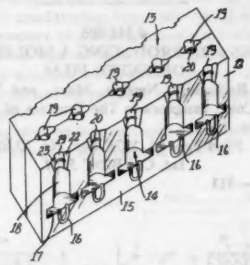
4,241,003

THERMOCOUPLES

Adrian L. Gray, Johannesburg, South Africa, assignor to Tempra Therm Limited, Boksburg North, South Africa

Filed Jan. 19, 1978, Ser. No. 870,663
Int. Cl.³ B28B *13/02*
U.S. Cl. 264—254 **10 Claims**

1. A method of manufacturing thermocouple units, which units include a body of ceramic material, a glass u-tube whose end portions are embedded in the ceramic and whose remaining portion projects beyond the front face of the ceramic, and a bi-metal junction located within the u-tube, said method comprising:
providing at least two matable mould members having internal recesses which when mated form a mould cavity conforming to the outer configuration desired for the thermocouple including particularly the projecting u-tube portion and the face of the ceramic from which it projects,
installing the u-tube in at least one mould member with the projecting portion in its conformed mould part,



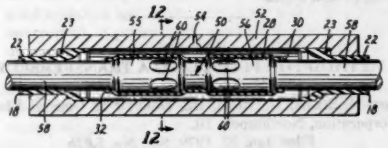
mating the matable mould members to form the cavity,
orienting the mould cavity so that the front face conforming portion of the cavity is at the bottom of the cavity, and
introducing settable ceramic material into the cavity in such manner that the ceramic reaches the front face-conforming portion of the cavity from a direction opposite to the projecting u-tube portion so that the ceramic body is densest adjacent its front face.

4,241,004

HIGH VOLTAGE SPLICE

Harold C. Hervig, P.O. Box 33427, St. Paul, Minn. 55133

Division of Ser. No. 940,356, Sep. 7, 1978, Pat. No. 4,164,620. This application Apr. 23, 1979, Ser. No. 32,384
Int. Cl.³ B32B *31/06*
U.S. Cl. 264—262 **2 Claims**



1. The process for production of an insulative corona discharge suppressing shield for a splice of a high voltage line comprising the steps of
I. providing a mandrel having a shaft portion and at least one expanded portion with depressions in said expanded portion extending radially inward,
II. applying a tube of semiconductive elastomeric material of substantially uniform thickness and an unstretched diameter less than that of said shaft portion of said mandrel over the expanded portion and a portion of the shaft portion at the ends of the expanded portion of said mandrel,
III. positioning a pair of end caps on said mandrel, one spaced from each end of said tube, said end caps being of generally elongated tubular form having outer and inner ends and having outer termination segments of uniform internal and external diameter distal to said tube and inner enlarged segments having variable external diameter and

internal diameter varying from being equal to the internal diameter of said terminal segment to being greater than the external diameter of said terminal segment,

IV. placing a form or mold having a sprue opening around said ends caps,

V. injecting elastomer composition curable to insulative material through said sprue hole around said semiconductive tube and in said end caps while forcing said tube into the said depressions of said mandrel, and

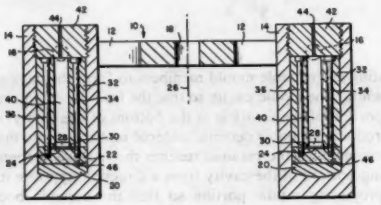
VI. curing said elastomer composition.

4,241,005

PROCESS FOR PRODUCING A MOLECULARLY ORIENTED FILM

Kenneth J. Rothschild, Newton, Mass., and Noel A. Clark, Boulder, Colo., assignors to The Trustees of Boston University, Boston, Mass.

Filed Feb. 21, 1979, Ser. No. 13,026
Int. Cl.³ B29C *5/04*
U.S. Cl. 264—311 **2 Claims**



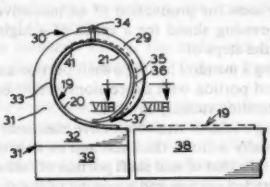
1. The process for forming a film having a thickness greater than about 10μ from molecules wherein said molecules are uniformly oriented in said film which comprises solvating or suspending said molecules in a liquid to form a liquid suspension or solution, centrifuging about a spin axis at high speed said suspension or solution onto a gravitational isopotential surface in the bucket of a swinging bucket rotor or in a rotor tube of a fixed angle rotor wherein the axis of the tube is displaced from said spin axis, and evaporating said liquid during said centrifuging at a rate sufficiently low as to prevent boiling of said liquid.

4,241,006

METHOD FOR PRODUCING A TRANSVERSELY CURVED FINGER BINDING

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Jan. 23, 1979, Ser. No. 5,826
Int. Cl.³ B29C *17/00*; B29F *5/00*
U.S. Cl. 264—322 **4 Claims**



1. A method for producing a plastic binding having a plurality of circularly formed fingers extending from a backbone portion of the plastic binding, each finger having a convex strengthening curve transverse to its longitudinal axis, comprising the steps of:

(a) providing a flat plastic binding blank having a backbone portion and a plurality of flat fingers integral with and extending from the backbone portion;

(b) heating the blank to a temperature sufficient to soften the plastic blank and permit deformation thereof;

(c) providing a two section openable tubular die, at least one of the sections having on an inner wall thereof elongated spaced-apart concave curve forming recesses running transverse to a longitudinal axis of the die, a spacing between the curve forming recesses corresponding to a spacing of the fingers;

(d) closing the die and inserting the blank into the closed die through an entranceway by lining up tips of the fingers with the curve forming recesses and sliding the tips along the recesses such that the fingers deform into the recesses during insertion so as to form the transverse strengthening curves in the fingers;

(e) cooling the formed blank; and

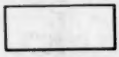
(f) opening and removing the formed blank.

4,241,007

METHOD OF PRODUCING WATER-ABSORBENT SOLID CLOTH-LIKE ARTICLES

Yoshihiko Tanaka; Teruhiko Sugimori, and Hideaki Habara, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1979, Ser. No. 20,839
Claims priority, application Japan, Apr. 13, 1978, 53-43579
Int. Cl.³ D21J *3/00*
U.S. Cl. 264—324 **2 Claims**



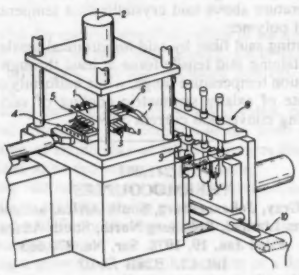
1. A method of producing a water-absorbent solid cloth-like article characterized by putting a binderless cellulosic nonwoven fabric into any desired mold and compressing and molding said binderless cellulosic nonwoven fabric under a pressure of 1100 to 1500 kg/cm² to give said fabric a water-absorption recovering property.

4,241,008

PROCESS FOR MANUFACTURE OF HOLLOW BODIES

Guy Flamand, Champforgeuil, and Jean-Francois Gregoire, Chalon-sur-Saone, both of France, assignors to Carnaud Total Interplastic, Chalon-sur-Saone, France

Filed May 2, 1978, Ser. No. 902,232
Claims priority, application France, May 6, 1977, 77 13851
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—529 **1 Claim**



1. A process for making hollow transparent bodies of polyethyleneglycol terephthalate, comprising the steps of:

(a) forming a blank in the form of a parison or preform by

injecting polyethyleneglycol terephthalate around a cooled mandrel in a first mold;

(b) rapidly cooling the blank to a temperature less than or equal to the crystallization temperature of the material and above its vitreous transition temperature;

(c) separating the blank from the first mold;

(d) subjecting said blank while free of the confines of a mold and while supported only by said mandrel to a small radial and/or axial expansion to cause a slight separation of the blank with regard to the mandrel;

(e) expelling said slightly expanded blank from the mandrel and into a channel which conducts the blank directly into a second mold; and

(f) rapidly expanding said blank in said second mold to expand said blank axially and/or radially to an extent sufficient to obtain bi-orientation and hardening before substantial crystallization of the material occurs.

4,241,009

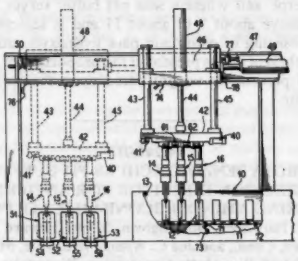
PARISON PICKERS WITH VARIABLE SPACING

Nickolas N. Sokolow, Cheshire, Mass., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 808,705, Jun. 21, 1977, Pat. No. 4,106,886. This application May 4, 1978, Ser. No. 902,899

Int. Cl.³ B29C 17/07, 17/12

U.S. Cl. 264—532 **3 Claims**



1. The method of transporting a plurality of parisons supported on spaced supports while moving through an oven to a plurality of molds whose center-to-center spacing is different from the spacing of said parisons in moving through said oven which comprises:

grasping a group of at least three parisons while said parisons are still moving through said oven,

raising said group out of said oven,

simultaneously moving said group vertically and laterally toward said plurality of molds,

changing the intra-parison spacing between the center parison and its two adjoining neighbors during such vertical and lateral movement toward said molds to achieve a spacing required by said center-to-center mold spacing,

clamping said parisons in said molds after said spacing has been changed, and

releasing the gripping on said parisons after such clamping.

4,241,010

PRESSURE RESPONSIVE CONDITIONING CONTROL GAS STERILIZATION

Walter J. Baran, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 6, 1979, Ser. No. 9,818

Int. Cl.³ A61L 2/20, 2/24

U.S. Cl. 422—2 **10 Claims**

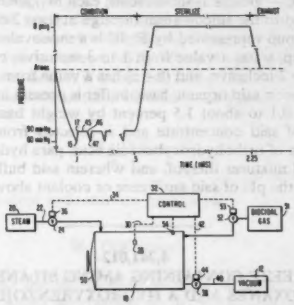
1. Method for conditioning goods for sterilization and sterilizing goods with a chemically biocidal gas in a sealable chamber capable of operating at pressures other than atmospheric, the conditioning including heating the goods to a selected temperature related to the desired sterilization temperature and moistening the goods to a desired level for such biocidal gas sterilization, with conditioning steps being free of temperature and moisture measurement requirements in the goods and in the chamber, comprising the steps, after closing the chamber to permit operation at pressures other than atmospheric, of

evacuating the chamber to a preselected subatmospheric level,

supplying a condensable conditioning vapor having heating and moisturizing properties for heating and moisturizing goods to be sterilized, such vapor having a determinable interrelationship between pressure level and temperature,

injecting such conditioning vapor into the chamber to raise chamber pressure to a second preselected subatmospheric pressure level corresponding to approximately desired sterilization temperature based on the interrelationship of pressure level and temperature of the condensable conditioning vapor,

such injecting of conditioning vapor being free of flow rate adjustment control requirements, then



holding the chamber in sealed condition for a predetermined time with evacuating and vapor injecting interrupted, then

repeating such sequence, of evacuating the chamber followed by injecting conditioning vapor to repressurize the chamber to the preselected subatmospheric pressure corresponding to approximately desired sterilizing temperature and holding the chamber in sealed condition for a predetermined time with evacuating and vapor injecting interrupted, a preselected number of times to establish desired temperature and moisture conditions in goods to be sterilized, then

adding chemically biocidal gas while the chamber is otherwise sealed to raise chamber pressure to a desired supraatmospheric pressure, and

holding such biocidal gas in the chamber for a time period to complete desired sterilization.

4,241,011

ANTIFREEZE CONTAINING CARBOXYSILOXANE METAL SALTS AND HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

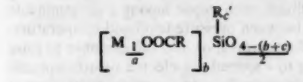
Division of Ser. No. 347, Jan. 2, 1979. This application Sep. 24, 1979, Ser. No. 78,306

Int. Cl.³ C09K 15/32; C23F 11/06, 11/10

U.S. Cl. 422—13 **3 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and at least one organic basic

buffer compound wherein said alcohol is selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, wherein said corrosion inhibitor is present in an amount of about 0.1 percent to about 10 percent by weight of said alcohol and is a water-soluble and alcohol-soluble metal salt of a carboxysiloxane consisting essentially of groups represented by the formula:



(1)

wherein M is a cation that imparts water and alcohol solubility to the siloxane, said cation being selected from the group consisting of the sodium, potassium, lithium and rubidium cations and the tetraorgano ammonium cations, a is the valence of the cation represented by M and has a value of at least one, R is a divalent hydrocarbon group containing from 0 to 1 $M_{1/a}OOC$— groups as substituents, each $M_{1/a}OOC$— group is connected to the silicon atom through at least 2 carbon atoms of the group represented by R; R′ is a monovalent hydrocarbon group, b has a value from 1 to 3 inclusive, c has a value from 0 to 2 inclusive, and (b+c) has a value from 1 to 3 inclusive, wherein said organic basic buffer is present in the amount of about 0.1 to about 1.5 percent by weight based upon the weight of said concentrate and is selected from the group consisting of orthohydroxybenzoic acid, para hydroxybenzoic acid, and mixtures thereof, and wherein said buffer serves to maintain the pH of said antifreeze or coolant above about 9 to about 11.

4,241,012

ANTIFREEZE CONTAINING AMINO SILANES, AMINO SILOXANES AND A HYDROXYBENZOIC ACID

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

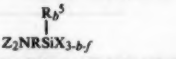
Division of Ser. No. 464, Jan. 2, 1979. This application Sep. 24, 1979, Ser. No. 78,307

Int. Cl.[3] **C09K** *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **3 Claims**

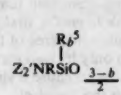
1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous alcohol-based antifreeze or coolant composition, the improvement wherein said composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and a hydroxybenzoic acid pH buffer wherein said concentrate contains a corrosion inhibitor, present in the proportion of 0.01 percent to 10 percent by weight of said concentrate, and selected from the group consisting of:

(a) hydroxycarbonoxysilanes represented by the formula:



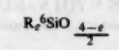
wherein Z is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing a substituent selected from the group consisting of the hydroxyl, amino, amido, ester, hydrocarbonoxy and cyano groups and divalent groups that are derived from oxirane compounds by the opening of the oxirane ring and that link the nitrogen atom to the silicon atom through a carbon to carbon to nitrogen bond; R is a divalent hydrocarbon group containing at least three carbon atoms; the Z_2N— group is attached to at least the third carbon removed from the silicon atom; R^5 is a member selected from the group consisting of the monovalent hydrocarbon groups and the $NH_2C_nH_{2n}$— groups where n has a value of at least 3; X is a member selected from the group consisting of the alkoxy and aroxy groups; b has a value from 0 to 2; f has a value from 0 to 2 and represents the number of said divalent groups represented by Z; and (3-b-f) has a value from 1 to 3;

(b) siloxanes consisting essentially of siloxane groups represented by the formula:



wherein Z′ is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing substituents selected from the group consisting of hydroxyl, amino, amido, ester, cyano and hydrocarbonoxy groups and R, R^5 and b have the above-defined meanings; and

(c) siloxanes consisting essentially of both the above-defined siloxane groups and silane groups having the formula:



wherein R^6 is a monovalent hydrocarbon group and e has a value from 1 to 3, wherein said alcohol is selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, and wherein said pH buffer serves to maintain the pH above about 9 to about 11 and is selected from the group consisting of ortho and para hydroxybenzoic acid and mixtures thereof and is present in the proportion of about 0.1 to about 1.5 percent by weight based upon the weight of said concentrate.

4,241,013

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING AMINOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

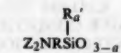
Division of Ser. No. 348, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,644

Int. Cl.[3] **C09K** *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **2 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, an aminosilicone-silicate polymer corrosion inhibitor, and a hydroxybenzoic acid pH buffer and corrosion inhibitor wherein said pH buffer is present in an amount of about 0.1 percent to about 1.5 percent by weight and said polymer corrosion inhibitor is present in an amount of from 0.1 percent to 10 percent by weight all based upon the weight of said concentrate and consists essentially of:

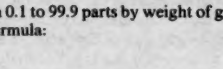
(A) from 0.1 to 99.9 parts by weight of siloxane groups represented by the formula:



wherein Z is a member selected from the group consisting of the hydrogen atom, unsubstituted monovalent hydrocarbon groups, and substituted monovalent hydrocarbon groups containing from 0 to 1 hydroxy group as a substituent and from 0 to 1 amino group as a substituent; R is an unsubstituted divalent hydrocarbon group containing at least three carbon atoms; the Z_2N group is attached to at least the third carbon atom removed from the silicon atom; R′ is an unsubstituted monova-

lent hydrocarbon group and a has a value from 0 to 2 inclusive and

(B) from 0.1 to 99.9 parts by weight of groups represented by the formula:



wherein M is a cation that forms a water soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium and tetra-organoammonium cations; b is the valence of the cation represented by M and has a value of at least one and c has a value from 1 to 3 inclusive and wherein said alcohol is selected from the group consisting of at least one of ethanol, methanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and said pH buffer and corrosion inhibitor is selected from the group consisting of ortho or para hydroxybenzoic acid and mixtures thereof.

4,241,014

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ALKALI METAL SILICATE-CONTAINING ANTIFREEZE COMPOSITIONS

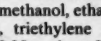
Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 351, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,645

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10, 11/18*

U.S. Cl. 422—13 **4 Claims**

1. In a process of inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of a major proportion of at least one alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, about 0.05 to about 0.5 percent by weight of at least one water-soluble silicate and, as a pH buffer and corrosion inhibitor, about 0.1 to about 1.5 percent by weight of at least one hydroxybenzoic acid selected from the group consisting of ortho and para hydroxybenzoic acid, wherein said water-soluble silicate has the formula:



wherein M is an alkali metal and n has a value of about 0.5 to about 4, and wherein said buffer serves to maintain the pH of said antifreeze above about 9 to about 11.

4,241,015

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

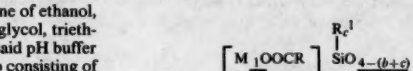
Division of Ser. No. 349, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,646

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **6 Claims**

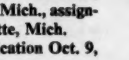
1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol; an organosilicone-silicate polymer corrosion inhibitor; and a hydroxybenzoic acid pH buffer and corrosion inhibitor composition capable of buffering the pH in the range of above about 9 to about 11, wherein said pH buffer is selected from the group consisting of ortho hydroxybenzoic acid, para hydroxybenzoic acid, and mixtures thereof and is present in the amount of about 0.1 to about 1.5 percent by weight based upon the weight of said antifreeze; wherein said organo-silicone-silicate polymer corrosion inhibitor is present in an amount of 0.01 percent to 10 percent by weight of said concentrate; and wherein said polymer consists essentially of:

(A) 10 to 90 parts by weight of siloxane groups represented by the formula:

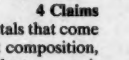


(I)

wherein M is a cation that forms a water-soluble silicate selected from the group consisting of the sodium, potassium, lithium, rubidium and tetra(alkyl)ammonium cations, a is the valence of the cation represented by M and is an integer having a value of at least one, R is a member selected from the group consisting of the unsubstituted divalent hydrocarbon groups,

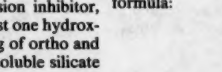


substituted divalent hydrocarbon groups, each



is connected to the silicon atom through at least 2 carbon atoms of the group represented by R, R^1 is a monovalent hydrocarbon group, b is an integer having a value from 1 to 3 inclusive, c is an integer having a value from 0 to 2 inclusive and (b+c) have a value from 1 to 3 inclusive and

(B) 10 to 90 parts by weight of groups represented by the formula:



(II)

wherein M and a have the above-defined meanings and d is an integer having a value from 1 to 3 inclusive, said parts by weight of said groups being based on 100 parts by weight of the organosilicone-silicate polymer.

4,241,016

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILOXANE-SILICATE COPOLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 350, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,705

Int. Cl.³ C23F *11/10*

U.S. Cl. 422—17 **2 Claims**

1. In a process for inhibiting the corrosion of metals, especially aluminum, that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol is selected from the group consisting of methanol, ethanol, propanol, diethylene glycol, triethylene glycol, propylene glycol, glycerol and ethylene

glycol; a water-soluble organosiloxane-silicate copolymer corrosion inhibitor; and at least one hydroxybenzoic acid pH buffer and corrosion inhibitor capable of buffering the pH in the range above about 9 to about 11 wherein said copolymer is present in the amount of from 0.01 percent to 10 percent by weight based upon the weight of said concentrate and consists essentially of:

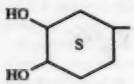
(1) 0.1 to 99.9 parts by weight of at least one member selected from the group consisting of (a) siloxane groups represented by the formula:

$$RSiO_{1.5}$$

wherein R is a member selected from the group consisting of the methyl, ethyl, phenyl and vinyl groups and (b) siloxane groups represented by the formula:

$$[YC_aH_{2a}]_b \; SiO_{\frac{4-(b+c)}{2}}$$

wherein Y is a member selected from the group consisting of the cyano group, $CH_2(OH)CH(OH)$ group, $CH_2(OH)CH(OH)CH_2$ group,



group,

$CH_2(OH)CH(OH)CH_2O$- group and $R''(OCH_2CH_2)_n(OC_3H_6)_mO$— group, wherein R'' is a member selected from the group consisting of the monovalent hydrocarbons and the hydrogen atom, n and m are integers and n has a value of at least 1, m has a value from 0 to 20 inclusive, the ratio of n to m is at least 2 to 1, a is an integer and has a value of at least 2, C_aH_{2a} is an alkylene group, the group represented by Y is separated from the silicon atom by at least two successive carbon atoms, b is an integer and has a value of from 1 to 3 inclusive, R' is a monovalent hydrocarbon group, c is an integer and has a value from 0 to 2 inclusive, (b+c) has a value from 1 to 3 inclusive; and

(2) 0.1 to 99.9 parts by weight of at least one silicate group represented by the formula:

$$\left[\frac{M_1O}{d}\right]_e SiO_{\frac{4-e}{2}}$$

wherein M is a cation that forms a water soluble silicate, d is the valence of the cation represented by M and has a value of at least 1 and e has a value from 1 to 3 inclusive, said parts by weight of said groups in the copolymer being based on 100 parts by weight of the copolymer wherein said pH buffer is at least one of para hydroxybenzoic acid and ortho hydroxybenzoic acid and is present in the amount of about 0.1 percent to about 1.5 percent by weight based upon the weight of said concentrate.

4,241,017

DEVICE FOR MEASURING A URINE DISCHARGE

Thomas W. Balistreri, Lake Bluff; Carl J. Steigerwald, Wauconda; Terry N. Layton, Arlington Heights; Frank K. Villari, Oak Park, all of Ill., and W. Martin Schultze, New Berlin, Wis., assignors to The Kendall Company, Boston, Mass.

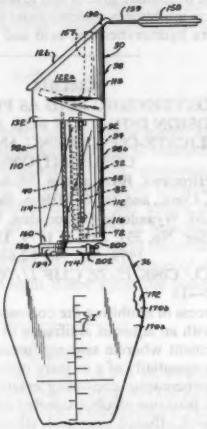
Filed Apr. 24, 1979, Ser. No. 32,820

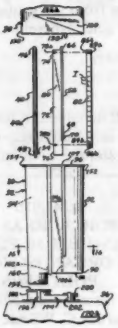
Int. Cl.³ G01F *1/20*; G01N *31/22*

U.S. Cl. 422—58 **26 Claims**

1. A device for measuring a discharge of urine, comprising:

a hollow open topped receptacle having upright walls and a lower wall defining a chamber, an elongated first upright plate extending laterally across the inside of the receptacle substantially the height of the chamber from said lower wall to a location adjacent an upper end of the receptacle, said first plate defining channel means intermediate the first plate and an upright wall of the receptacle, said first plate having slot means extending longitudinally along the first plate, and said receptacle having an elongated second upright plate extending laterally across the inside of the receptacle from a location adjacent an upper end of the receptacle to a location adjacent a lower end of the receptacle, with said second plate defining a compartment intermediate the first and second plates, passageway means intermediate the second plate and an upright wall of the receptacle, and a space adjacent said lower wall communicating between said passageway means and said compartment;





a fluid receiving member having a lower wall and sidewalls defining a cavity, an inlet port communicating with the cavity for passage of the discharge into the cavity, and a lower outlet opening communicating with the cavity for passage of the discharge out of the cavity said lower wall defining fluid flow means for directing fluid to said receiving member outlet opening;

means for releasably attaching a lower portion of the receiving member to said open top of the receptacle with said receiving member lower wall covering the channel means and compartment, and with the receiving member outlet

opening communicating with the passageway means when said receiver and receptacle are in assembly; and means for indicating the maximum height of liquid collected in said compartment.

4,241,018

APPARATUS WITH EXCHANGEABLE BURETTES

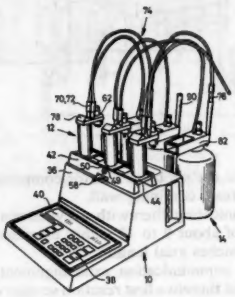
Karl Lang, Uerikon, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed May 10, 1979, Ser. No. 37,738

Claims priority, application Switzerland, Sep. 15, 1978, 9663/78

Int. Cl.³ G01N *31/16;* B01L *3/02*

U.S. Cl. 422—75 **7 Claims**



1. An apparatus with exchangeable burettes, which comprises

(a) an operating unit having an operating position,

(b) a plurality of exchangeable burettes each being selectively mountable in association with said operating unit,

(c) a plurality of supply cylinders selectively mountable on the operating unit and selectively connectable thereto in the operating position, each cylinder being associated with a respective one of the burettes, and

(d) a plurality of storage containers with a respective storage container associated with each cylinder and mounted separately from the operating unit, each storage container including a mount defining a recess for removably receiving and temporarily holding the associated supply cylinder.

4,241,019

COMBUSTIBLE GAS DETECTING ELEMENT

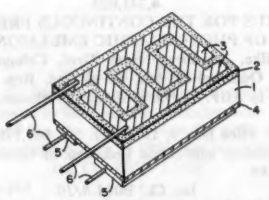
Yoshihiko Nakatani, Osaka; Seiichi Nakatani, Kadoma; Masayuki Sakai, Katano, and Michio Matsuoka, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 15, 1979, Ser. No. 12,557

Claims priority, application Japan, Feb. 20, 1978, 53/18948

Int. Cl.³ G01N *27/12*

U.S. Cl. 422—94 **2 Claims**



1. A combustible gas detecting element comprising 99.0 to 25 mole percent of gamma-ferric oxide (γ-Fe_2O_3), 0.5 to 70 mole percent of gamma-aluminum oxide (γ-Al_2O_3), and 0.05 to 15 mole percent, in total, of at least one member selected from the group consisting of lanthanum (La), cerium (Ce), praseodymium (Pr) and neodymium (Nd) in terms of La_2O_3, Ce_2O_3, Pr_2O_3 and Nd_2O_3, respectively.

4,241,020

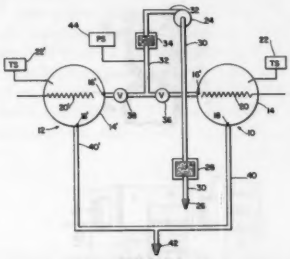
APPARATUS FOR BIOLOGICAL DECONTAMINATION AND SUBSEQUENT NEUTRALIZATION OF A SPACE

James I. Grantham, Raleigh, N.C., assignor to Certek, Inc., Raleigh, N.C.

Filed Jun. 16, 1978, Ser. No. 916,199

Int. Cl.³ A61L *2/20, 2/26;* G05D *7/00, 16/00*

U.S. Cl. 422—109 **12 Claims**



1. Apparatus for automatically and remotely decontaminating a space with formaldehyde and subsequently neutralizing the formaldehyde comprising,

a housing containing:

a formaldehyde generator which includes a totally enclosable canister for containing a formaldehyde gas generating substance and having an access opening therein, a gas tight, removable cover for said access opening, gas inlet and outlet openings, and a heater means for heating said canister to generate formaldehyde gas;

a neutralizing agent generator which includes a totally enclosable canister for containing a formaldehyde neutralizing, gas generating substance and having an access opening therein, a gas tight, removable cover for said access opening, gas inlet and outlet openings, and a heater means for heating said canister to generate neutralizing gas; said formaldehyde generator and said neutralizer generator being mounted in said housing;

pumping means in said housing for discharging a gas under pressure, the suction of which is adapted to be connected in fluid communication with the space to be decontaminated, and the discharge of which is adapted to be selectively connected in fluid communication through said formaldehyde generator or said neutralizer generator to the space to be decontaminated;

fluid connecting means for selectively connecting said pumping means through only one of said formaldehyde generator and said neutralizer generator and connectable to the space to be decontaminated;

a control means in said housing for automatically controlling the supplying of power to the components of said apparatus and the sequencing of said apparatus through a first, formaldehyde generation stage during which said formaldehyde heater means is actuated and said pumping means is energized and connected to said formaldehyde generator by said fluid connecting means; a second, formaldehyde contact stage during which said pumping means and both said heater means are de-energized; a third, neutralizer generation stage during which said neutralizer heater means is actuated and said pumping means is energized and connected to said neutralizer generator by said fluid

connecting means; and a fourth, neutralizer contact stage during which said pumping means and both said heater means are de-energized;

a control panel on said housing for externally indicating the particular stage in the operating sequence of said apparatus;

and said control means further including a system de-energizing means for preventing the resupplying of power to said control means after the power has been interrupted and a means for detecting a high-pressure condition in said fluid connecting means, and wherein after said control means has sequenced beyond said first stage of operation, said control means automatically returns to said second stage whenever power has been interrupted or whenever a high-pressure condition is detected.

4,241,021

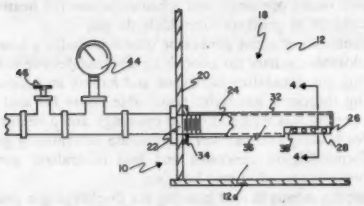
FLUIDIZED BED REACTOR SYSTEM

Adam E. Skrzec, West Nyack, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 14, 1979, Ser. No. 39,055

Int. Cl.³ B01J *8/18*

U.S. Cl. 422—143 **4 Claims**



1. A fluidized bed reactor system comprising:

(a) a vessel adapted to contain a fluidized bed;

(b) a plurality of fluid injector means mounted through the vessel wall for injecting and distributing a fluidizing medium into the lower portion of the vessel, each injector means comprising:

(i) an elongated injector projecting into the vessel, the injector being withdrawably mounted through the vessel wall, and having at least one downwardly directed orifice, and

(ii) a shield means mounted to the vessel wall extending above the injector along the length of the injector for maintaining an opening in the bed when the injector is withdrawn, the opening being substantially equivalent to the length of the injector;

(c) a fluid supply means in fluid communication with each elongated injector for supplying a fluidizing medium to the fluidized bed.

4,241,022

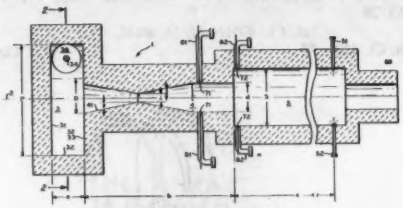
CARBON BLACK FOR LOW-HYSTERESIS RUBBER COMPOSITIONS

Gerard Kraus, and Harold R. Hunt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 822,779, Aug. 8, 1977, which is a division of Ser. No. 681,977, Apr. 30, 1976, Pat. No. 4,071,496. This application Dec. 29, 1978, Ser. No. 974,464

Int. Cl.³ C09C *1/48*

U.S. Cl. 422—156 **7 Claims**



1. A tubular carbon black reactor comprising

(a) an upstream confining wall,

(b) communicating therewith a cylindrical precombustion section of about 9 to 12 inches diameter and about 3 to about 6 inches axial length,

(c) in open communication, axial alignment and operatively connected thereto a first reaction section wherein said first reaction section is frustoconically shaped, about 3 to 8 inches long, has an upstream diameter of about 2 to 4 inches, and converges in downstream direction at an angle between the reactor axis and the frustoconical surface in the range of about 10 to 18 degrees, the downstream diameter of the first reaction section being between about 1 to 2 inches,

(d) in open communication, axial alignment and operatively connected to the first reaction section a second reaction section of essentially cylindrical shape, the ratio of the diameter of said second reaction section to the diameter of the downstream end of the first reaction section being about 2:1 to 5:1 so that the cross-section of the reaction sections abruptly widens from said first reaction section to said second reaction section,

(e) means for generating a hot combustion gas vortex in said precombustion section,

(f) means for introducing a hydrocarbon feedstock into contact with the hot combustion gas, the locus of discharge of the hydrocarbon feed being at the reactor wall within the downstream portion of the first reaction section, and

(g) means to withdraw carbon black-containing smoke from the downstream end of said second reaction section.

4,241,023

APPARATUS FOR THE CONTINUOUS PREPARATION OF PHOTOGRAPHIC EMULSIONS

Werner Wilke, Starnberg; Hans Gref, Cologne, and Hans Frenken, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,778

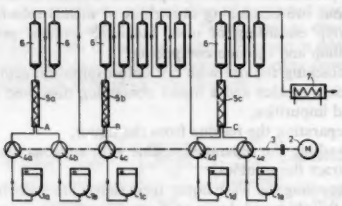
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755166

Int. Cl.³ B01J *8/10*

U.S. Cl. 422—187 **7 Claims**

1. An apparatus for the continuous preparation of photographic emulsions by a continuous flow process in which a

stream entering a pipe system flows successively through the various sections of the system corresponding to the individual stages of the process, wherein a path for mixing and ripening of the emulsion is provided which comprises multiple piston metering pumps with pump heads moving in unison, mixing paths, first junction ducts connecting the metering pumps with the mixing paths, ripening pipe packets which are arranged in series downstream of the mixing paths, second junction ducts connecting the mixing paths to the ripening pipe packets, the

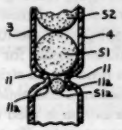


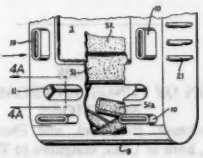
ripening pipe packets being comprised of a plurality of individual pipes, the pipe packets are constructed and arranged to be replaceable as units and to be varied as to the number of pipes contained in them, the ripening pipes having a diameter which is selectable as to the stroke number of the piston metering pumps and the kinematic viscosity of the streams of emulsions so that delivery of the stream in the ripening pipes always occurs in coordination with the starting flow in the metering pumps.

4,241,024
Patent Not Issued For This Number

4,241,025
CHLORINATOR
Joel Grayson, IV, Marietta, and Donald P. Kahle, Oxford, both of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.
Continuation of Ser. No. 959,591, Nov. 13, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,344
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—263 **2 Claims**

1. A chlorinator arranged to float in a body of liquid to be treated and comprising cannister (1) having a bottom wall 8, a pair of side walls (3,4) and a pair of end walls (5,6) arranged to contain a vertical stack of horizontally disposed elongated chlorinator sticks (S) of similar size and shape which are slowly soluble in water, a pair of oppositely disposed side walls (3,4) of said cannister spaced apart to define one transverse dimension of said cannister which is slightly greater than the transverse dimension of said sticks (S) so as to form a single stack of sticks, apertures (10) formed in at least one of the walls of said cannister, inwardly projected protrusion means (11) formed on at least one of said oppositely disposed side walls and near the bottom (8) thereof for engaging one of said sticks and for holding said stick in spaced relation to the bottom of said cannister, said one of said sticks being slidable past said inwardly projected protrusion means (11) and into the bottom portion of said cannister after predetermined reduction in the transverse dimension thereof due to dissolution in water sup-





plied from said body of water through said apertures (10), float means (2) including a buoyant body having a central aperture (13) whose axis is vertical and which includes a pair of diametrically opposed segments (15,16) and a central portion, each of said segments (15,16) having arcuate peripheral parts on which coupling elements (17,20) are formed for disjointably engaging coupling elements (21) formed on the end walls of said cannister (1) so as to support said cannister (1) at adjustable levels relative to said float means (2) and each of said segments (15,16) having an arcuate clearance portion (18,19) for accommodating vertical movement of said cannister (1) relative to said float means (2), and an inlet (9) having a transverse dimension slightly larger than the transverse dimension of said sticks and formed in a wall of said cannister other than one of said oppositely disposed side walls and near the top (7) thereof through which said sticks are inserted.

4,241,026
ION EXCHANGE PROCESS FOR THE RECOVERY OF URANIUM
Tsoung-yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Nov. 16, 1978, Ser. No. 961,438
Int. Cl.² C01G *43/02*
U.S. Cl. 423—7 **6 Claims**

1. In a method for the recovery of uranium from a pregnant lixiviant by contacting an anionic ion exchange resin with said lixiviant to adsorb uranium therefrom and wherein said lixiviant contains chloride ions which inhibit the adsorption of uranyl ions, the improvement comprising employing an anionic ion exchange resin having cationic adsorption sites provided by quaternary ammonium groups having a hydroxyalkyl group as a quaternizing substituent.

4,241,027

REDUCTIVE STRIPPING PROCESS FOR THE RECOVERY OF EITHER OR BOTH URANIUM AND VANADIUM

Paul D. Bowerman, Edmond, Okla., and Michael F. Lucid, Houston, Tex., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Nov. 16, 1978, Ser. No. 961,194
Int. Cl.[2] C01G *43/02, 31/00*
U.S. Cl. 423—10 9 Claims

1. A process for recovering at least one specie selected from the group consisting of hexavalent uranium and pentavalent vanadium from wet process phosphoric acid comprising contacting said wet process phosphoric acid with an organic extractant dissolved in a substantially water immiscible organic diluent to separate the selected specie from the wet process phosphoric acid, disengaging the organic extractant from the wet process phosphoric acid and then contacting the organic extractant with a stripping solution to separate the extracted specie from the organic extractant for recovery, the improvement which comprises providing a stripping solution comprising a phosphoric acid solution containing trivalent vanadium in which the trivalent vanadium is used to reduce the extracted specie to a lower valence state to effect the separation from the organic extractant.

4,241,028

SORPTION OF TUNGSTEN FROM ALKALINE SOLUTIONS

S. Ralph Borrowman, Bountiful, and Paulette B. Altringer, Summit Park, both of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 4, 1979, Ser. No. 27,134
Int. Cl.[3] C01G *41/00*
U.S. Cl. 423—54 3 Claims

1. A process for sorption of tungsten from alkaline brines containing about 50–70 ppm tungsten and having a pH of about 7 to 8 comprising contacting the brine with ion exchange resin beads consisting essentially of an 8-hydroxyquinoline-resorcinol-formaldehyde resin, said beads being essentially spherical in shape, having diameters in the range of about 300 to 850 microns and prepared by copolymerization of the monomers in suspension in chlorobenzene, said chlorobenzene containing a dispersant in an amount to result in formation of beads of the required size and shape.

4,241,029

LIQUID/LIQUID EXTRACTION OF GALLIUM VALUES FROM BASIC AQUEOUS SOLUTIONS THEREOF

Jacques Helgorsky, Frepillon, and Alain Leveque, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 14, 1978, Ser. No. 969,470
Claims priority, application France, Dec. 15, 1977, 77 37785
Int. Cl.[3] C01G *15/00*
U.S. Cl. 423—112 17 Claims

1. In a process for recovering gallium values contained in a basic aqueous solution by a liquid/liquid extraction comprising contacting the basic aqueous solution with a water immiscible organic phase comprising an organic solvent and dissolved therein an organic-soluble substituted hydroxyquinoline, whereby the gallium is extracted into the organic phase; separating the organic phase from the basic aqueous solution and recovering the gallium values from the organic phase, the improvement which comprises the organic phase further comprising dissolved therein an organic carboxylic acid compound.

4,241,030

CONTINUOUS PROCESS FOR OBTAINING PURE ALUMINA FROM AN ACIDIC LIQUOR ORIGINATING FROM THE CHLOROSULPHURIC ATTACK OF AN ALUMINOUS ORE AND FOR THE PURIFICATION OF THE LIQUOR WHICH HAS BEEN FREED FROM ALUMINA

Joseph Cohen; Alain Adjemian, and Michel Ferran, all of Aix-en-Provence, France, assignors to Aluminum Pechiney, Lyons, France

Filed May 8, 1979, Ser. No. 35,439
Claims priority, application France, May 18, 1978, 78 15370
Int. Cl.[3] C01F *7/22, 7/26*
U.S. Cl. 423—126 7 Claims

1. A process for obtaining a purified alumina from calcined aluminous ore containing impurities of metals selected from the group consisting of iron, titanium, sodium, potassium, magnesium and calcium comprising:

(a) attacking the ore with hot chlorosulphuric acid to provide a residue and a liquor containing dissolved alumina and impurities,

(b) separating the residue from the liquor,

(c) washing the separated residue with aqueous medium to extract the solubles,

(d) recycling the wash liquor from step (c) to make up a part of the chlorosulphuric acid attacking liquor in step (a),

(e) concentrating the liquor separated in step (b) to the limit of solubility of aluminum chloride hexahydrate,

(f) adding sulphuric acid liquor to the concentrate of step (e),

(g) introducing HCl gas recycled from step (j) into the mixture from step (f) to precipitate almost all of the aluminum chloride hexahydrate,

(h) separating the liquor containing the impurities from the precipitate from step (g),

(i) degassing the liquor separated in step (h) to release HCl gas,

(j) recycling the gaseous HCl for introduction into the mixture in step (g) to precipitate almost all of the aluminum chloride hexahydrate,

(k) adding potassium ions to the degassed liquor from step (i),

(l) concentrating the liquor from step (k) to precipitate ferripotassium sulphates and sulphates of other impurities,

(m) separating the sulphuric liquor from the precipitate formed in step (l),

(n) recycling the sulphuric liquor from step (m) to the sulphating step (f), and

(o) thermally decomposing the separated aluminum chloride hexahydrate from step (h) to produce pure alumina.

4,241,031

DISSOLUTION OF NICKELIFEROUS SULFIDE MATERIAL IN HCL

Gustavo A. Meyer; John R. Carlberg, both of Arvada, Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,781
Int. Cl.[3] C01G *53/08*
U.S. Cl. 423—150 35 Claims

1. A method for the hydrochloric acid leaching of low-copper nickeliferous sulfide material optionally containing up to about 5% copper and having a nickel, sulfur, and optionally, cobalt content of at least about 85% by weight of said material which comprises,

selecting the nickeliferous sulfide material to be leached from the group consisting of:

(A) a thermally activated material having a S/Ni atom ratio of about 0.3 to 0.9,

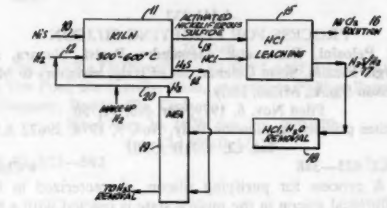
(B) a material consisting essentially of a primary nickel sulfide precipitate having a S/Ni atom ratio of approximately 1, and

(C) a material having a S/Ni atom ratio of over 0.9,

leaching said selected material in accordance with the following procedure:

(I) where the material selected is (A), the material is first leached as a slurry at a selected low dissolution temperature in the range of about 50° C. to 80° C. with an amount of hydrochloric acid solution of a selected normality in the range of a about 3 N to 8 N sufficient to dissolve at least about 50% by weight of the total nickel in said material, followed by completion of said leaching at a selected high temperature in the range of over 80° C. to boiling until a terminal free acid concentration falling in the range of about 0.5 to 5 N is reached with substantially complete dissolution of the remaining nickeliferous sulfide material,

(II) where the material selected is (B), the material is leached as a slurry at a selected dissolution temperature of over 50° C. in a hydrochloric acid solution of a selected normality in the range of about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel contained in said material and provide a residue refractory to further dissolution in which the S/Ni atom ratio exceeds 1,



said residue being thereafter recovered and thermally activated to reduce the sulfur content thereof at least about 10% by weight of the total sulfur content,

said activated residue being thereafter leached again as aforesaid, with an amount of hydrochloric acid of selected normality ranging from about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel in said activated residue and provide a terminal free acid concentration of about 0.5 N to 5 N,

(III) where the material selected is (C), it is first thermally activated to reduce the sulfur content thereof at least about 10% by weight of the total sulfur content following which the activated sulfide material is leached as a slurry at a selected dissolution temperature of over 50° C. with an amount of hydrochloric acid solution of a selected normality in the range of about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel contained in said material, and provide a terminal free acid concentration of about 0.5 N to 5 N, and

thereafter collecting and purifying the resulting nickel chloride leach solution obtained.

4,241,032

PROCESS FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GAS STREAMS

Erik S. E. Werner; Cornelis Ouwerkerk, and Roelof Cornelisse, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 22, 1979, Ser. No. 41,457

Claims priority, application Netherlands, May 23, 1978, 7805550

Int. Cl.³ B01D 53/34

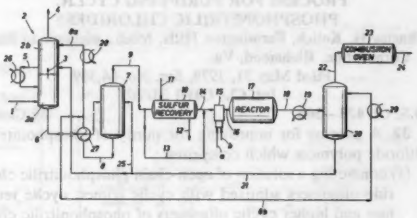
U.S. Cl. 423—226 **10 Claims**

1. A process for the treatment of a gas containing carbon dioxide, hydrogen sulfide, and organic sulfur compounds, the gas having a relatively high carbon dioxide content in relation to the hydrogen sulfide present, comprising

(a) introducing the gas into a first absorption zone where it is countercurrently contacted with a regenerable absorption liquid supplied to said zone to remove hydrogen sulfide and organic sulfide compounds under conditions which are nonselective or slightly selective in respect of the co-absorption of carbon dioxide, said first absorption zone being divided into at least two sections arranged one above the other and the gas being introduced into the lowest of the sections and the absorption liquid being supplied to an upper section, the absorption liquid being intermediately cooled outside the absorption zone before being supplied from an upper section to a lower section;

(b) passing the treated gas from the absorption zone and passing the regenerable absorption liquid, loaded with hydrogen sulfide, organic sulfur compounds, and carbon dioxide from the lower section of the absorption zone to a regeneration zone, and regenerating the absorption liquid by heating and/or stripping to yield a gas mixture containing hydrogen sulfide, oganic sulfur compounds, carbon dioxide, and a regenerated absorption liquid, a portion of which is supplied to an upper section of the first absorption zone, and a portion of which is supplied to a second absorption zone;

(c) passing a portion of the gas mixture obtained in step (b) to a catalytic reduction zone in which sulfur compounds



other than hydrogen sulfide are converted into hydrogen sulfide at temperatures between 180° and 450° C. in the presence of hydrogen and/or carbon monoxide over a catalyst suitable therefor, and passing the rest of said gas mixture to a sulfur recovery unit, and converting the hydrogen sulfide in the mixture to sulfur with recovery of the resultant sulfur and an offgas;

(d) passing the off-gas from the sulfur recovery unit to the said catalytic reduction zone in order to convert into hydrogen sulfide any remaining sulfur compounds;

(e) passing the combined gas mixture leaving the catalytic reduction zone and containing substantially hydrogen sulfide to a second absorption zone and contacting said combined gas mixture at a temperature below the dew point of water with the same regenerable absorption liquid as used in the first absorption zone, under operating conditions which are selective in respect of the co-absorption of carbon dioxide;

(f) discharging the unabsorbed portion of the combined gas mixture from step (d) and passing the absorption liquid substantially loaded with hydrogen sulfide at least partly to the upper section of the first absorption zone.

4,241,033

PROCESS FOR THE SEPARATION OF SULFUR OXIDES FROM A GASEOUS MIXTURE CONTAINING SULFUR OXIDES AND OXYGEN

Edward A. Ginger, Northbrook, and Armand J. deRosset, Clarendon Hills, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 852,393, Nov. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 748,995, Dec. 9, 1976, abandoned. This application Feb. 1, 1979, Ser. No. 8,712

Int. Cl.[3] B01J *8/00*; C01B *17/00*; C09K *3/00*

U.S. Cl. 423—244 11 Claims

1. In a process for the separation of inorganic sulfur oxides by oxidation of said inorganic sulfur oxides from a gaseous mixture containing said inorganic sulfur oxides and oxygen in which said gaseous mixture is contacted with a solid sulfur oxides acceptor comprising copper, copper oxide or a mixture thereof dispersed on a carrier material at a temperature of from about 150° C. to about 450° C. and in which said acceptor is regenerated with a reducing gas, the improvement which comprises the addition to said carrier material of about 0.01 to about 1.0 wt.% of said solid acceptor of a platinum group metal or an oxide thereof and a component of about 0.01 to about 1.0 wt.% of said solid acceptor selected from the group consisting of germanium, rhenium, tin and oxides thereof.

4,241,034

PROCESS FOR PURIFYING CYCLIC PHOSPHONITRILIC CHLORIDES

Charles H. Kolich, Farmington Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 31, 1979, Ser. No. 44,309

Int. Cl.[3] C01B *25/10*

U.S. Cl. 423—300 35 Claims

32. A process for improving the purity of phosphonitrilic chloride polymers which comprises:

(1) contacting a solution of open-chain phosphonitrilic chloride oligomers admixed with cyclic trimer, cyclic tetramer and higher cyclic oligomers of phosphonitrilic chloride in a normally liquid aliphatic hydrocarbon with aqueous lower alkylnitrile;

(2) separating the liquid hydrocarbon phase laden with cyclic trimer and some cyclic tetramer from the aqueous phase thereby produced; and

(3) recovering high purity cyclic trimer and cyclic tetramer from the hydrocarbon phase.

4,241,035

SYNTHETIC IMOGOLITE

Victor C. Farmer, Aberdeen, Scotland, assignor to National Research Development Corporation, London, England

Filed Jul. 3, 1979, Ser. No. 54,650

Claims priority, application United Kingdom, Jul. 7, 1978, 29132/78

Int. Cl.[3] C01B *33/26*

U.S. Cl. 423—327 21 Claims

1. A method of synthesising an inorganic material which is a fibrous product having tubular structure related to, or resembling, the natural product imogolite, the method comprising:

preparing an aqueous hydroxyaluminum silicate solution containing up to 0.5 molar aluminum, wherein the atomic proportion of Si:Al in the solution does not exceed 0.6:1 when the solution contains a concentration of silicon over 20 mM, the solution having a pH of 3.1 to 5.0 and having been prepared by hydrolysis in acid of aluminum alkoxide and, introduced not later than the aluminum alkoxide, tetraalkyl silicate; and digesting the solution thus prepared until a product is obtained displaying discernible electron diffraction peaks at 1.4 Å, 2.1 Å and 4.2 Å.

4,241,036

SYNTHETIC CRYSTALLINE ZEOLITE AND PROCESS FOR PREPARING SAME

Edith Flanigen, White Plains, N.Y., and Elsa R. Kellberg, Vienna, Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 655,318, Jul. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 569,805, Aug. 3, 1966, abandoned. This application Oct. 23, 1975, Ser. No. 625,091

Int. Cl.[2] C01B *33/28*

U.S. Cl. 423—328 6 Claims

1. A crystalline synthetic zeolitic molecular sieve having a composition expressed in terms of moles of oxides as

$$1.0\pm0.5M_{2/n}O:Al_2O_3:5\text{–}20SiO_2:0\text{–}10H_2O$$

wherein M represents at least one action having a valence "n", and having an x-ray powder diffraction pattern essentially as set forth in Table A.

4,241,037

PROCESS FOR PURIFYING SILICON

Luigi Pelosini, Fontaneto; Alessandro Parisi, Novara, and Sergio Pizzini, Sesto Calende, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 6, 1979, Ser. No. 91,750

Claims priority, application Italy, Nov. 9, 1978, 29622 A/78

Int. Cl.[3] C01B *33/02*

U.S. Cl. 423—348 4 Claims

1. A process for purifying silicon, characterized in that metallurgical silicon in the molten state is reacted with a barium compound selected from the class consisting of barium carbonate, barium oxide, barium hydroxide, and mixtures thereof at a temperature in the range of 1,550° to 2,000° C. and then, after cooling and crushing, the so reacted silicon is leached with a dilute inorganic acid to yield solar grade silicon having a B content not higher than 5 ppmw, and Al content lower than 1 ppmw, a P content not higher than 1 ppmw, and a total content of other metal impurities lower than 1.5 ppmw.

4,241,038

REDUCTION OF FERRIC CHLORIDE

Philip J. Gabb; Hayden Monk, and John Lumsden, all of Bristol, England, assignors to Mineral Process Licensing Corporation BV, The Hague, Netherlands

Filed May 10, 1979, Ser. No. 37,681

Claims priority, application United Kingdom, May 16, 1978, 19987/78

Int. Cl.[3] C01G *94/10*

U.S. Cl. 423—493 11 Claims

1. In a method for the reduction of ferric chloride in the presence of a reducing agent to produce ferrous chloride the improvement which comprises using a reducing agent comprising at least a major portion of sulphur monochloride.

4,241,039

METHOD OF REMOVAL OF ARSENIC FROM A SULFURIC ACID SOLUTION

Shiro Koh; Tomomichi Kudo; Michihiro Maeshima, and Tamotsu Kibayashi, all of Okayama, Japan, assignors to Dowa Mining Co. Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,872

Claims priority, application Japan, Dec. 14, 1977, 52/150175

Int. Cl.[3] C01B *17/90*; C01G *28/02*

U.S. Cl. 423—531 2 Claims

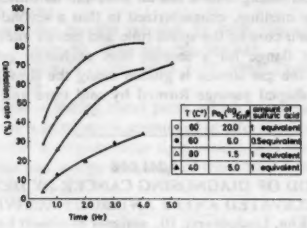
1. A method of removal of As^{3+} from a sulfuric acid solution containing arsenic and ferrous ions which comprises:

(a) subjecting a part of said solution to oxygen under pressure so as to oxidize said ferrous ions to ferric ions;

(b) mixing the oxidized solution with the remainder of the solution under agitation in amounts such that the weight

ratio of Fe^{3+}/As^{3+} in the mixture is between about 2 and 40;

(c) adjusting the pH of the mixture from step (b) to 3.5 to 4.6


Oxidation rate (%)
Time (hr)
T (C°) Po2 (kg/cm²) Equiv. amount of sulfuric acid
○ 60 20.0 1 equivalent
● 60 6.0 0.5equivalent
△ 80 1.5 1 equivalent
▲ 40 5.0 1 equivalent

to produce a precipitate which coprecipitates or adsorbs arsenic; and

(d) separating and removing the precipitates from the mixture.

4,241,040

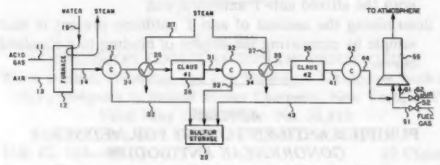
INCINERATION OF SULFUR PLANT TAIL GAS

Joe Van Pool, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 24, 1978, Ser. No. 909,079

Int. Cl.³ C01B *17/50*

U.S. Cl. 423—542 **3 Claims**



1. A method for the treatment of a tail gas formed in a sulfur process, said tail gas containing less than about 236 parts per million (ppm) H_2S, said method comprising the steps of:

mixing said tail gas with a fuel gas;

supplying the mixture of said fuel gas and said tail gas to a burner means to therein convert substantially all of the H_2S in said tail gas to SO_2; and

venting the combustion product resulting from the combustion of the mixture of said fuel gas and said tail gas through a stack to the atmosphere, the conversion of substantially all of said H_2S in said tail gas to said SO_2 being accomplished at a stack temperature in the range of about 900° F. to about 950° F., said combustion product containing less than about 10 PPM H_2S.

4,241,041

METHODS FOR THE RECOVERY OF SULFUR COMPONENTS FROM FLUE GAS AND RECYCLE SODIUM SULFITE BY REDUCTION-SMELTING AND CARBONATING TO STRIP HYDROGEN SULFIDE

William G. Farin, Neenah, Wis., assignor to MEI Systems Inc., Menasha, Wis.

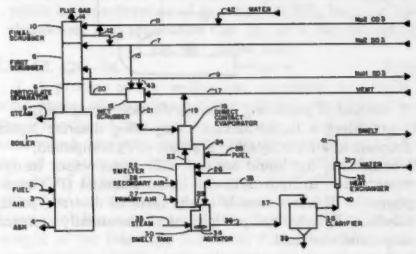
Continuation-in-part of Ser. No. 840,996, Oct. 11, 1977, Pat. No. 4,148,684, which is a continuation-in-part of Ser. No. 739,718, Nov. 8, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,490

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.³ C01B *17/00, 17/16;* **D21C** *11/02, 11/12*

U.S. Cl. 423—563 **20 Claims**

1. An improved method for utilizing a solution containing sodium sulfite to absorb sulfur dioxide from flue gas formed during the burning of sulfur-containing fuels under oxidizing conditions, separating sulfur components from the absorbed sulfur dioxide for recovery, and recycling the sodium sulfite; said method comprising the steps of: (1) burning fuel under reducing conditions to provide sufficient heat to concentrate and smelt a solution containing sodium sulfite, forming a smelt comprised primarily of sodium sulfide and sodium carbonate while releasing sulfur dioxide: (2) dissolving the smelt from step one in water to form a smelt solution; (3) precarbonating the said dissolved smelt solution from step two with a gas comprising of hydrogen sulfide, carbon dioxide and water vapor to convert the sodium sulfide component to sodium hydrosulfide and sodium carbonate, and to convert a portion of the sodium carbonate component to sodium bicarbonate while absorbing a portion of the carbon dioxide thereby reducing the carbon dioxide content in the hydrogen sulfide; (4) separating the gas components by releasing the hydrogen sulfide and contained carbon dioxide from step three for recovery; (5) desulfiding the precarbonated solution from step three by stripping said precarbonated solution with gas containing carbon dioxide and water vapor to reduce the partial pressure of the hydrogen sulfide which is released from the precarbonated solution during desulfiding and raise the temperature of the precarbonated solution by condensation, while reacting the precarbonated solution with a concentrated sodium bicarbonate solution in which the concentration of sodium bicarbonate is maintained sufficiently high to hold the partial pressure of the carbon dioxide created by the reacted concentrated sodium bicarbonate and precarbonated solutions above the



partial pressure of the carbon dioxide provided by the gas utilized for stripping during the stripping operation, thereby preventing carbonation or formation of sodium bicarbonate by carbon dioxide absorption during said stripping, while converting the sodium hydrosulfide in said reacted solution to sodium carbonate, forming a solution containing sodium carbonate and sodium bicarbonate and forming and releasing hydrogen sulfide, venting said formed and released hydrogen sulfide and a portion of the carbon dioxide and water vapor used from said stripping for use in step three; (6) pressure carbonating a portion of the solution containing sodium carbonate and sodium bicarbonate from step five with carbon dioxide gas at a pressure above 1.2 atmospheres to convert said portion into a solution containing a high concentration of sodium bicarbonate and recycling at least a portion of the solution with a high concentration of sodium bicarbonate for use in step five; (7) decarbonating the portion of solution containing sodium carbonate and sodium bicarbonate formed in step five and not used in step six by reacting with a sodium bisulfite solution at a pressure above 1.2 atmospheres to form a solution containing sodium sulfite and forming carbon dioxide, utilizing a portion of the solution containing sodium sulfite in step one and releasing the formed carbon dioxide gas at a pressure above 1.2 atmospheres for use in step six; (8) scrubbing flue gas formed in burning sulfur-containing fuels under oxidizing conditions with that portion of the solution containing sodium sulfite formed in step seven and not used in step one, forming a solution containing sodium bisulfite and utiliz-

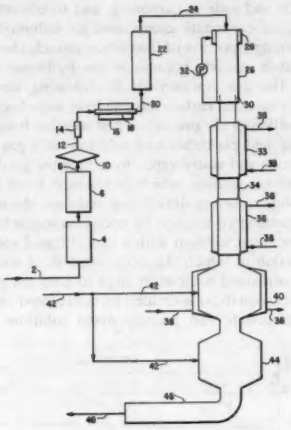
ing a portion of the solution containing sodium bisulfite for decarbonation in step seven.

4,241,042

SPHERICAL TITANIUM DIOXIDE PARTICLES AND PROCESS OF MANUFACTURE

Egon Matijevic, Potsdam, N.Y., and Mario Visca, Alessandria, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 19, 1978, Ser. No. 916,883
Int. Cl.³ C01G *23/047*
U.S. Cl. 423—610 **15 Claims**



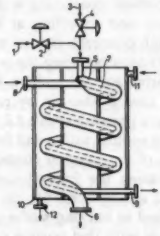
1. A method of preparing titanium dioxide, comprising:
(A) providing a liquid aerosol comprising discrete liquid droplets of a hydrolyzable titanium (IV) compound;
(B) contacting the liquid aerosol with water vapor in dynamic flow, to hydrolyze the liquid titanium (IV) compound to titanium dioxide in the form of discrete, solid, substantially spherical particles of a substantially uniform shape and size; and
(C) recovering the titanium dioxide.

4,241,043

METHOD FOR EVAPORATING SOLVENTS AND REACTING COMPONENTS IN COMPOUND MIXTURES

Hartmut Hetzel, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,288
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811902
Int. Cl.³ B01J *19/00*; B01D *1/22*; F28D *7/04, 7/10*
U.S. Cl. 423—659 **3 Claims**



1. In a method of evaporating solvents and reacting material components in compound mixtures in a continuous spiral tube, in which a thin-layered annular liquid flow is propelled by means of an internally flowing gas stream, the improvement wherein said tube comprises a continuous spiral tube within a cylindrical casing which has an inlet and an outlet for a heat exchange medium, characterized in that a second tube is arranged as a core of the spiral tube and has an inlet flange and an outlet flange for a second heat exchange medium, and wherein the gas stream is guided along the flow path in the annular shaped passage formed by said core and said spiral tube.

4,241,044

METHOD OF DIAGNOSING CANCER BY DETECTING ELEVATED ANTI-T ANTIBODY ACTIVITY

Yung D. Kim, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 28, 1978, Ser. No. 973,991
Int. Cl.² G01N *33/16*; A61K *43/00*
U.S. Cl. 424—1 **8 Claims**

8. A method of diagnosing cancer by detecting elevated levels of anti-T antibody which comprises:
mixing a biological sample from a therapeutically untreated individual with a known amount of labeled T-antigen and anti-T antibody affixed to a solid support;
allowing the affixed antibody to compete with any anti-T antibody in said sample and selectively complex with the labeled T-antigen;
separating the solid support from the reaction medium;
measuring the degree of binding of the labeled T-antigen with the affixed anti-T antibody; and
determining the amount of anti-T antibody present in said sample by comparing the degree of binding to a standard curve.

4,241,045

PURIFIED ANTIGEN TO TEST FOR *NEISSERIA GONORRHEAE* ANTIBODIES

Hassan A. Gaafar, Voorheesville, N.Y., assignor to Research Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,954
Int. Cl.² G01N *33/16*; A61K *43/00*
U.S. Cl. 424—1 **17 Claims**

1. A serological method for determining the presence of *Neisseria gonorrhoeae* antibodies in human serum which comprises preparing a composition containing undiluted serum or diluted in a physiologically acceptable liquid at a dilution of about 1:2 to 1:1000, incubating with a composition containing a species specific antigen preparation produced from a growth culture of *Neisseria gonorrhoea* to form an antigen-antibody conjugate when said antibodies are present; and detecting the presence of said conjugate; the antigen being protein in nature and characterized as follows:
1. stable in boiling water for a period of one hour,
2. stable in an aqueous medium at pH values of 3–11,
3. stable when incubated with the following enzymes;
DNA—ase
RNA—ase
dextransase
neuraminidase
lysosyme,
4. isoelectric point of 4±0.2,
5. molecular weight of active subunits of 37,000–40,000 as determined by SDS-polyacrylamide gel,
6. contains 2–3% organic phosphorous,
7. soluble in water, and more soluble in aqueous media containing surface active agents; and insoluble in methanol, chloroform, and acetone,
8. reacts specifically with antibodies produced in rabbits against purified L-antigen,
9. partially soluble in 5% to 10% trichloroacetic acid.

4,241,046

METHOD OF ENCAPSULATING BIOLOGICALLY ACTIVE MATERIALS IN LIPID VESICLES

Demetrios P. Papahadjopoulos, 78 Heathwood, Williamsville, N.Y. 14221, and Francis C. Szoka, Jr., 375 Leroy Ave., Buffalo, N.Y. 14214

Continuation of Ser. No. 881,116, Feb. 24, 1978. This application Nov. 30, 1978, Ser. No. 964,815

Int. Cl.[3] A01N *25/26;* A61K *9/22;* A01N *25/00*

U.S. Cl. 424—19 1 Claim

1. A method of killing insect pests, which comprises applying to their situs an effective amount of an effective insecticide, encapsulated in an oligolamellar lipid vesicle, said lipid vesicle having a diameter within the range of from 2000 to 4000 angstroms.

4,241,047

NOVEL MEDICINAL COMPOSITION FOR THE TREATMENT OF BILIARY LITHIASIS

Jean-Claude Lechevin, Lyons, and Jean-Noël Treilles, Lissieu-Lozanne, both of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed Jul. 18, 1979, Ser. No. 815,424

Int. Cl.[3] A01N *45/02;* A61K *31/575, 9/32, 9/40*

U.S. Cl. 424—33 9 Claims

1. New medicament, which can be used in the treatment of biliary lithiasis, wherein the active principle is the association of hymecromone (4-methyl-7-hydroxycoumarine) and chenodeoxycholic acid.

4,241,048

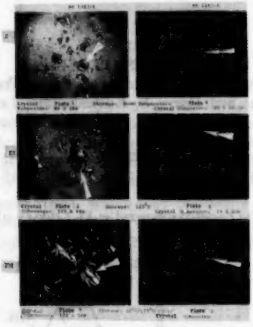
SUSPENSION COMPOSITION OF BENZOCAINE

Taras Durbak, Irvington, and Ara Nersesian, Livingston, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

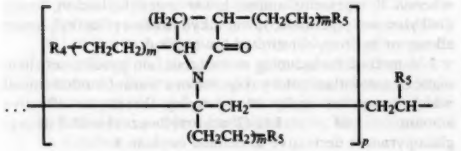
Filed May 1, 1979, Ser. No. 35,115

Int. Cl.[3] A61K *31/79;* A61L *9/14*

U.S. Cl. 424—45 19 Claims



1. An anesthetic compositon comprising a therapeutically effective amount of powdered benzocaine suspended in an essentially anhydrous carrier and containing an effective amount of a vinylpyrrolidone and a long chain alpha-olefin copolymer of the formula:



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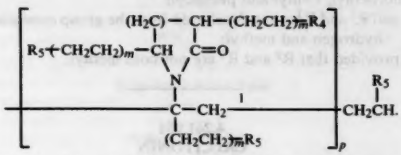


wherein R_5 is selected from the group consisting of hydrogen and alkyl, of from 1 to about 180 carbon atoms, p is an integer of from 10 to 100, and wherein the m's independently represent a numerical value of 0 to 1; when m is zero, R_5 is hydrogen; when m is 1, R_5 is selected from the group consisting of hydrogen and alkyl of from 1 to about 180 carbon atoms, and wherein at least one of the m's in at least one of the N-vinylpyrrolidone moieties has the value of 1;

the ratio of the said copolymer to benzocaine present is in the range of from about 0.05 parts to about 4 parts of copolymer to 1 part of benzocaine which is sufficient to significantly suppress crystal growth of said benzocaine on storage.

4,241,049

STABLE DENTIFRICE

Daniel Colodney, Green Brook, and James Norfleet, Plainfield, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 326,811, Jan. 26, 1973, abandoned, which is a continuation of Ser. No. 126,972, Mar. 22, 1971, abandoned. This application Oct. 10, 1975, Ser. No. 621,460

Int. Cl.[3] A61K *7/22*

U.S. Cl. 424—54 8 Claims

1. A process of preventing the separation into liquid and solid phases of an antibacterial dentifrice comprising forming the antibacterial dentifrice by adding to a single phase vehicle mass which comprises solids and liquids proportioned to cream or gel consistency and which contains about 0.01–5% by weight of flavoring oil and about 0.015–2% by weight of phosphate ion, as an antibacterial agent, 1,6-di-(p-chlorophenyl biguanido) hexane, in amount to provide about 0.01–5% by weight of the free base and about 0.25–10% by weight of a water-soluble alkaline earth metal salt of a strong acid to prevent phase separation.

4,241,050

PENAM 1,1-DIOXIDES AS BETA-LACTAMASE INHIBITORS

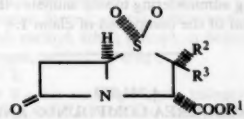
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,848

Int. Cl.[3] C07D *277/60;* A61K *31/425, 31/43*

U.S. Cl. 424—114 28 Claims

1. A compound of the formula



and the pharmaceutically acceptable base salts thereof, wherein R^1 is selected from the group consisting of hydrogen, alkanoyloxymethyl having from 3 to 7 carbon atoms, 1-(alkanoyloxy)ethyl having from 4 to 8 carbon atoms, 1-methyl-1-(alkanoyloxy)ethyl having from 5 to 9 carbon atoms, alkoxycarbonyloxymethyl having from 3 to 6 carbon atoms, 1-(alkoxycarbonyloxy)ethyl having from 4 to 7 carbon atoms, 1-methyl-1-(alkoxycarbonyloxy)ethyl having from 5 to 8 carbon atoms, 3-phthalidyl, 4-crotonolactonyl and gamma-

butyrolacton-4-yl, benzyl, 4-nitrobenzyl, benzhydryl, 2,2,2-trichloroethyl, t-butyl and phenacyl;

and R^2 and R^3 are each selected from the group consisting of hydrogen and methyl;

provided that R^2 and R^3 are not both methyl.

4,241,051

CALCITONIN

Robert B. Christie, 49 Willingdon Park Dr., Hampden Park, Eastbourne, East Sussex; John A. Parsons, 17 Ovington St., and Christopher G. Rudman, 12 Lawrence Mansions, Lordship Pl., Cheyne Walk, both of London SW3, all of England

Filed Oct. 30, 1978, Ser. No. 955,608

Claims priority, application United Kingdom, Nov. 4, 1977, 45967/77

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A method for the treatment of a patient suffering from pathological processes in bone and connective tissue of the ear which comprises the topical application of calcitonin (as hereinbefore defined) to effect control of said processes by transepithelial action at the site of application.

4,241,052

NOVEL NITROSOUREA COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Kenji Tsujihara, Urawa; Masakatsu Ozeki, Wako, and Yoshihisa Arai, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

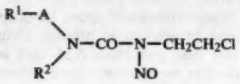
Filed May 14, 1979, Ser. No. 38,638

Claims priority, application United Kingdom, Jun. 10, 1978, 26659/78; Jan. 27, 1979, 2955/79

Int. Cl.[3] A61K *31/70;* **C07H** *13/12;* **A61K** *31/73*

U.S. Cl. 424—180 **48 Claims**

1. A nitrosourea compound of the formula:



wherein R^1 is an alicyclic group having 3 to 6 carbon atoms, phenyl, phenyl substituted with one to 3 substituents selected from the class consisting of halogen, lower alkyl, lower alkoxy, hydroxy and nitro, a heteromonocyclic group selected from the class consisting of oxiranyl, tetrahydrofuryl, 1,3-dioxolanyl, 1,4-dioxanyl, morpholino, tetrahydro-S,S-dioxo-thienyl, furyl, thienyl and pyridyl; R^2 is aldo-pentofuranosyl, aldo-pentopyranosyl, aldo-hexopyranosyl or O-aldo-hexopyranosyl-(1→4)-aldo-hexopyranosyl; and A is a single bond, straight or branched alkylene having one to 3 carbon atoms.

43. A method of treating malignant tumor cells in test animals comprising administering to said animals a therapeutically effective amount of the compound of claim 1.

4,241,053

NOVEL NITROSOUREA COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Kenji Tsujihara, Urawa; Masakatsu Ozeki, Wako, and Yoshihisa Arai, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

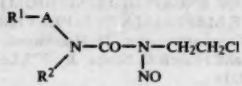
Filed Aug. 14, 1979, Ser. No. 66,421

Claims priority, application United Kingdom, Aug. 25, 1978, 34564/78; Jan. 27, 1979, 02957/79

Int. Cl.[3] A61K *31/70, 31/73;* **C07H** *13/12*

U.S. Cl. 424—180 **20 Claims**

1. A compound of the formula:



wherein R^1 is lower alkoxy, lower alkoxy-methoxy or 2-hydroxyethoxy, R^2 is aldo-pentofuranosyl, aldo-pentopyranosyl, aldo-hexopyranosyl or O-aldo-hexopyranosyl-(1→4)-aldo-hexopyranosyl, and A is straight or branched alkylene of one to four carbon atoms, said alkylene being substituted with from 0 to at least one lower alkoxy group.

20. A therapeutic composition which comprises a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,241,054

DETOXIFYING LIPOPHILIC TOXINS

Robert A. Volpenhein, and Ronald J. Jandacek, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 8, 1978, Ser. No. 967,658

Int. Cl.[3] A61K *31/70*

U.S. Cl. 424—180 **15 Claims**

1. A method for detoxifying humans and lower animals exposed to lipophilic toxins, comprising administering to a human or lower animal exposed to lipophilic toxins a therapeutically effective amount of a non-absorbable, non-digestible polyol fatty acid polyester having at least 4 fatty acid ester groups, wherein the polyol fatty acid polyester is selected from the group consisting of sugars and sugar alcohols containing from 4 to 8 hydroxyl groups esterified with fatty acid groups and wherein each fatty acid group has from about 8 to about 22 carbon atoms.

4,241,055

DERIVATIVES OF ASPIRIN

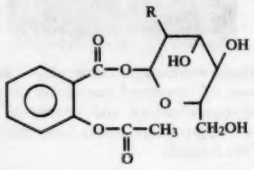
Anwar A. Hussain, Lexington, Ky.; James E. Truelove, Douingtown, Pa., and Harry B. Kostenbauder, Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed May 30, 1979, Ser. No. 43,815

Int. Cl.[3] A61K *31/70;* **C07H** *13/02*

U.S. Cl. 424—180 **22 Claims**

1. An 1-O-(2'acetoxy)benzyl-α-D-2-deoxy-glucopyranose derivative having the formula



wherein R represents amino, lower monoalkylamino, lower dialkylamino, piperidino, lower alkyl, lower cycloalkyl, lower alkoxy or hydroxy-substituted lower alkyl.

2. A method for inducing an analgesic, antipyretic, antirheumatic or anti-inflammatory response in a warm-blooded animal which comprises orally administering thereto an effective amount of 1-O-(2'-acetoxy)benzoyl-α-D-2-deoxy-glucopyranose derivative as defined in claim 1.

4,241,056

PENICILLINS AND SALTS THEREOF

Bernd Wetzel, Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Eberhard Woitun; Roland Maier, both of Biberach an der Riss; Uwe Lechner, Ummendorf; Hanns Goeth, and Rolf Werner, both of Bierach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

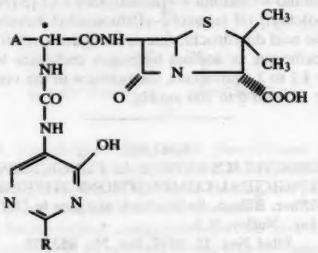
Filed Feb. 21, 1979, Ser. No. 13,006

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808153; Nov. 27, 1978, 2851226; Nov. 27, 1978, 2851270

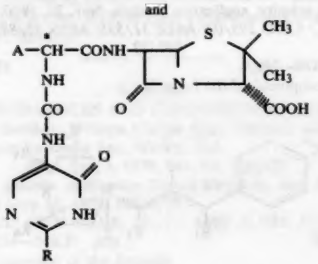
Int. Cl.³ A61K *31/655, 31/43;* C07D *499/68, 499/70*

U.S. Cl. 424—226 5 Claims

1. A compound of the tautomeric formulas



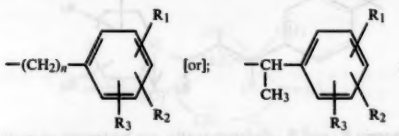
and



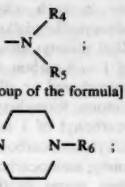
wherein

A is phenyl; 4-hydroxyphenyl; 2-thienyl; 3-thienyl; cyclohexyl; cyclohexen-1-yl; cyclohexa-1,4-dien-1-yl; phenyl disubstituted in 3,4-position, where the substituents are each chlorine, hydroxyl or methoxy;

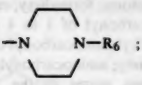
R is hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cyclopropyl, which may optionally be substituted with one to two methyl groups, an ethyl group or a phenyl group; cycloalkyl of 4 to 8 carbon atoms optionally containing one or more double bonds;



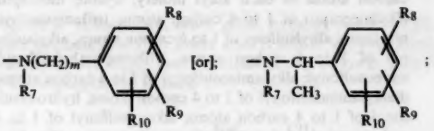
β-phenylethyl; γ-phenyl-propyl; β-phenylethylidine; cyclopropyl-methyl; 1-cyclopropylethyl; hydroxyl; alkoxy of 1 to 8 carbon atoms; alkenyloxy of 1 to 8 carbon atoms; cycloalkoxy of 3 to 6 carbon atoms; phenoxy; benzyloxy; mercapto; alkylmercapto of 1 to 8 carbon atoms; cycloalkylmercapto of 3 to 6 carbon atoms; phenylmercapto; benzylmercapto; p-chloro-benzylmercapto; alkylsulfinyl of 1 to 4 carbon atoms;



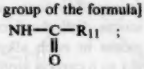
[a group of the formula]



morpholino; thiomorpholino; thiomorpholino-S-oxide; thiomorpholino-S,S-dioxide;



[a group of the formula]



n is 0 or 1;

R_1 R_2 and R_3 are each hydrogen; halogen; amino; alkylamino; dialkylamino of 1 to 4 carbon atoms; hydroxy; alkoxy of 1 to 4 carbon atoms; nitro; formylamino; aliphatic acylamino of 1 to 4 carbon atoms in the alkyl moiety; alkylsulfonylamino of 1 to 4 carbon atoms; alkylcarbonyl of 1 to 4 carbon atoms in the alkyl moiety; alkylcarbonyloxy of 1 to 4 carbon atoms in the alkyl moiety; alkoxycarbonyl of 1 to 4 carbon atoms in the alkyl moiety; aminocarbonyl, optionally substituted by one to two alkyl groups of 1 to 3 carbon atoms; cyano; alkylmercapto of 1 to 4 carbon atoms; alkylsulfoxy of 1 to 4 carbon atoms; alkylsulfonyl of 1 to 4 carbon atoms; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms in the alkyl moiety; trifluoromethylsulfonyl; alkyl of 1 to 4 carbon atoms; trifluoromethyl; or phenyl;

R_4 and R_5 are each hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cycloalkyl of 3 to 8 carbon atoms which may be substituted with one to two methyl or ethyl groups and may contain one or more double bonds; or cycloalkyl-substituted alkyl of 3 to 8 carbon atoms in the cycloalkyl moiety and 1 to 3 carbon atoms in the alkyl moiety;

R_4 and R_5 together can also form an alkylene chain of 2 to 7 carbon atoms, so that a 3- to 8-membered heterocyclic ring is formed, which may optionally be substituted with one to two alkyl groups of 1 to 3 carbon atoms or a benzyl group, or may contain one to two double bonds or may be fused with a phenyl ring;

R_6 is hydrogen; formyl; acetyl; ethoxycarbonyl; benzyloxycarbonyl; methyl; ethyl; phenyl; or benzyl;

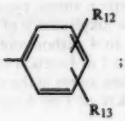
R_7 is hydrogen, methyl; or ethyl;

m is 0, 1 or 2;

R_8, R_9 and R_{10} are each hydrogen; halogen; amino; alkylamino of 1 to 6 carbon atoms; dialkylamino, where each alkyl moiety contains 1 to 6 carbon atoms; pyrrolidyl; piperidyl; hydroxyl; alkoxy of 1 to 6 carbon atoms; formylamino; formylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; aliphatic acylamino of 1 to 3 carbon atoms; acylalkylamino of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 carbon atoms in the acyl moiety; trifluoroacetylamino; aminocarbonylamino; alkylaminocarbonylamino of 1 to 6 carbon atoms in the alkyl moiety; dialkylaminocarbonylamino of 1 to 6 carbon atoms in each alkyl moiety; nitro; alkylsulfonylamino of 1 to 4 carbon

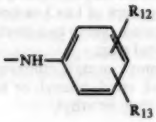
atoms in the alkyl moiety; alkylsulfonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; hydroxysulfonylamino; hydroxysulfonylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; amidino; guanidino, formyl, alkylcarbonyl of 1 to 6 carbon atoms; benzoyl; alkylcarbonyloxy; alkoxycarbonyl or alkoxycarbonyloxy groups of 1 to 6 carbon atoms; formyloxy; carboxyl; aminocarbonyl; alkylaminocarbonyl of 1 to 4 carbon atoms in the alkyl moiety; dialkylaminocarbonyl of 1 to 4 carbon atoms in each alkyl moiety; aminocarboxyl; alkylaminocarboxyl of 1 to 4 carbon atoms in the alkyl moiety, dialkylaminocarboxyl of 1 to 4 carbon atoms in each alkyl moiety; alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety; alkoxycarbonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; cyano; mercapto; alkylmercapto of 1 to 6 carbon atoms; trifluoromethylmercapto; alkylsulfoxy of 1 to 6 carbon atoms; alkylsulfonyl of 1 to 6 carbon atoms; trifluoromethylsulfonyl; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms; hydroxysulfonyl of 1 to 4 carbon atoms; alkoxysulfonyl of 1 to 4 carbon atoms; aminosulfonyloxy, alkylaminosulfonyloxy of 1 to 4 carbon atoms, dialkylaminosulfonyloxy groups of 1 to 4 carbon atoms in each alkyl moiety; straight or branched alkyl of 1 to 6 carbon atoms, which may contain double bonds or may be halo-substituted; azido; dialkylmethyleneimino of 2 to 6 carbon atoms in the alkyl moieties; dialkylaminomethylideneimino groups of 2 to 6 carbon atoms in the alkyl moieties; or phenyl;

R_{11} is hydrogen, alkyl of 1 to 8 carbon atoms; alkenyl of 1 to 8 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl; benzyl;



;

C_xF_{2x+1}, where x is 1, 2, 3 or 4; alkoxy of 1 to 4 carbon atoms; benzyloxy, cycloalkoxy of 3 to 6 carbon atoms; amino, alkylamino of 1 to 8 carbon atoms; dialkylamino of 1 to 8 carbon atoms in each alkyl moiety; cycloalkylamino of 3 to 6 carbon atoms; cycloalkyleneamino of 3 to 6 carbon atoms; or



;

R_{12} and R_{13} are each hydrogen; chlorine, methoxy; methyl; or benzylamino; and

R_{14} is alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; benzyl; phenyl, optionally substituted with one to three methyl groups; amino; alkylamino of 1 to 6 carbon atoms; or dialkylamino of 1 to 6 carbon atons in each alkyl moiety;

or a non-toxic, pharmacologically acceptable salt thereof.

4. An antibiotic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim **1**.

4,241,057

ANTIBIOTIC COMPOSITIONS

Kenzo Ishizuka, Amagasaki; Hiroshi Fujisawa, Toyonaka, and Etsunosuke Noda, Yao, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 828,841, Aug. 29, 1977, Pat. No. 4,161,527. This application Mar. 9, 1979, Ser. No. 19,185

Int. Cl.[3] **A61K** *31/545*

U.S. Cl. 424—246 **7 Claims**

1. A vacuum-sealed vial, which contains a solid antibiotic composition comprising 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}thiomethyl-3-cephem-4-carboxylic acid dihydrochloride or its hydrate and sodium carbonate or sodium hydrogen carbonate, the ratio of the hydrogen chloride moiety of 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}thiomethyl-3-cephem-4-carboxylic acid dihydrochloride or its hydrate relative to said sodium carbonate or sodium hydrogen carbonate being substantially 1:1 to 2 equivalents, the pressure in the vial being in the range of from 0 to 300 mmHg.

4,241,058

HETEROCYCLICS USEFUL AS FUNGICIDES AND FUNGICIDAL COMPOSITIONS THEREOF

Albert Pfiffner, Bülach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

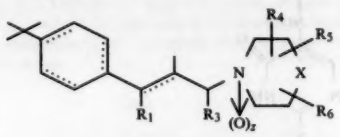
Filed Nov. 18, 1977, Ser. No. 853,018

Claims priority, application Austria, Nov. 22, 1976, 8660/76

Int. Cl.[3] **C07D** *295/02;* **A61K** *31/535;* **A01N** *43/84;* **C07D** *295/22*

U.S. Cl. 424—248.4 **174 Claims**

1. A compound of the formula



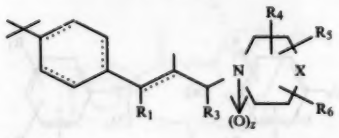
I

, wherein R_1 and R_3, independently, are hydrogen or methyl;

R_4, R_5 and R_6, independently, are hydrogen or alkyl of 1 to 4 carbon atoms, and two of R_4, R_5 and R_6 can each be bonded to the same carbon atom or together can form a fused alicyclic or aromatic six-membered ring; X is a methylene or an oxygen atom; z is zero or 1; and the dotted bonds can be hydrogenated,

or an acid addition salt of a compound thereof which is basic.

92. A fungicidal composition comprising an effective amount of at least one compound of the formula



(I)

wherein R_1 and R_3, independently, are hydrogen or methyl;

R_4, R_5 and R_6, independently, are hydrogen or alkyl of 1 to 4 carbon atoms, and two of R_4, R_5 and R_6 can each be bonded to the same carbon atom or together can form a fused alicyclic or aromatic six-membered ring; X is a methylene or an oxygen atom; z is zero or 1; and the dotted bonds can be hydrogenated,

or an acid addition salt of a compound thereof which is basic and an inert carrier material.

96. A fungicidal composition, in accordance with claim **92**,

which contains 4-[3-(p-tert.butyl-phenyl)-2-methyl-propyl]-2,6-dimethyl-morpholine.

4,241,059

6-[(ARYLOXY)METHYL]-2-MORPHOLINEMETHANOL DERIVATIVES AND USE THEREOF

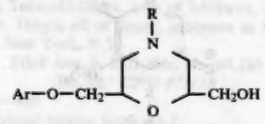
Frederic P. Hauck, Bridgewater, and Glenn A. Jacobs, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 17, 1979, Ser. No. 104,493

Int. Cl.[3] **A61K** *31/535;* **C07D** *265/30*

U.S. Cl. 424—248.58 **12 Claims**

1. A compound having the structure



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl or lower alkenyl, and Ar is a monocyclic or bicyclic aromatic ring containing from 6 to 10 carbons in the ring, and physiologically acceptable acid-addition salts thereof.

11. A pharmaceutical composition for use in treating arrhythmia comprising an anti-arrhythmic effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,241,060

NITROIMIDAZOLES AND COMPOSITIONS THEREOF

Carey E. Smithen, Welwyn Garden City, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

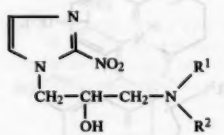
Filed Aug. 3, 1978, Ser. No. 930,622

Claims priority, application United Kingdom, Aug. 19, 1977, 34908/77; May 15, 1978, 19534/78

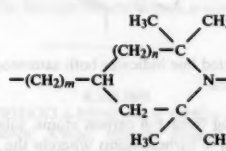
Int. Cl.[3] **C07D** *413/06, 233/91;* **A61K** *31/535, 31/415*

U.S. Cl. 424—248.57 **20 Claims**

1. A compound of the formula

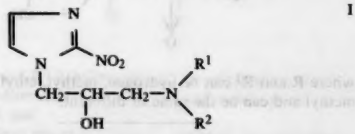


wherein R^1 is hydrogen, lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl and R^2 is lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl or a grouping of the formula

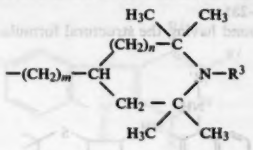


wherein m is zero and n is 1 or m is 1 and n is zero and R^3 is hydrogen, methyl or hydroxy, or R^1 and R^2 taken together with the nitrogen atom to which they are attached are a 5-membered, 6-membered or 7-membered saturated heteromonocyclic ring selected from pyrrolidino, piperidino, 3-hydroxypyrrolidino, 4-hydroxy-piperidino, 3-hydroxy-hexahydro-1H-azepino, piperazino, N-methylpiperazino, N-(2-hydroxyethyl)piperazino, morpholino, hexahydro-1H-azepino, and thiamorpholino, or an acid addition salt thereof.

20. A hypoxic cell radiosensitizing or antiprotozoal pharmaceutical preparation containing a hypoxic cell radiosensitizing amount or an antiprotozoal amount of a compound of the formula



wherein R^1 is hydrogen, lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl and R^2 is lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl or a grouping of the formula



wherein m is zero and n is 1 or m is 1 and n is zero, and R^3 is hydrogen, methyl or hydroxy, or R^1 and R^2 when taken together with the nitrogen atom to which they are attached are a 5-membered, 6-membered or 7-membered saturated heteromonocyclic ring selected from pyrrolidino, piperidino, 3-hydroxypyrrolidino, 4-hydroxypiperidino, 3-hydroxy-1H-azepino, piperazino, N-methylpiperazino, N-(2-hydroxyethyl)-piperazino, morpholino, hexahydro-1H-azepino, and thiamorpholino, or a pharmaceutically acceptable acid addition salt thereof, in association with a compatible pharmaceutical carrier material.

4,241,061

OXAZOLIDINYL-QUINOXALINES AND USE AS GROWTH PROMOTERS

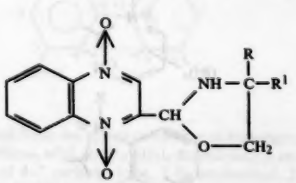
Richard E. Ivy; Vernon V. Young, and Robert D. Williams, all of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 21, 1979, Ser. No. 40,833

Int. Cl.[3] **C07D** *413/04, 31/495*

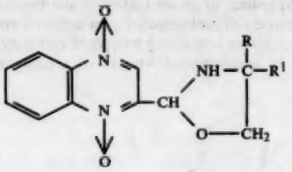
U.S. Cl. 424—250 **15 Claims**

1. Substituted quinoxaline dioxides represented by the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different.

8. A method for promoting the growth of animals comprising incorporating in the animal's feed rations in an amount of from 50 to 150 g/ton of feed a compound represented by the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different.

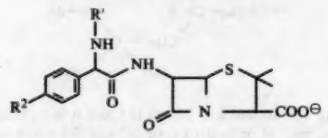
4,241,062

ANTIBACTERIAL PENICILLINS

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 29, 1979, Ser. No. 43,086
Int. Cl.[3] A61K *31/505*; C07D *499/74*
U.S. Cl. 424—251 **4 Claims**

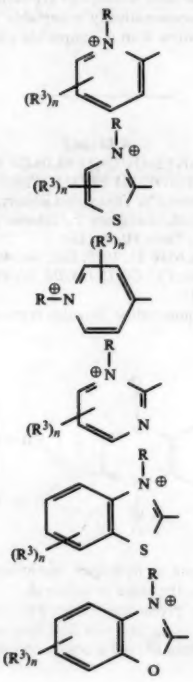
1. A compound having the structural formula:



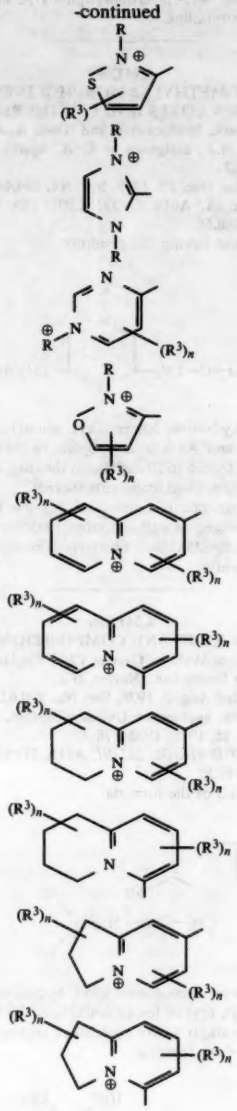
and the pharmaceutically acceptable salts and esters thereof wherein:

R^2 is hydrogen or hydroxyl; and

R′ is selected from the group consisting of:



-continued



wherein the dotted line indicates both saturated and unsaturated rings; and

wherein:

R is alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6

carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3.

4. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,241,063

PURINE DERIVATIVES AND THEIR USE AS BRONCHODILATORS

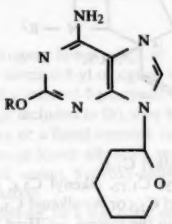
Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,240

Int. Cl.³ C07D *473/18*

U.S. Cl. 424—253 **7 Claims**

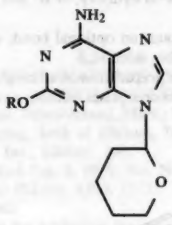
1. A compound having Formula I



(I)

wherein R is lower alkoxy 1 to 4 carbon atoms inclusive or a pharmaceutically acceptable acid addition salt thereof.

6. A bronchodilating process which comprises systemic administration to a mammal in need thereof an effective dose of from about 0.1 to 20 mg./kg. body weight of a compound of Formula I



(I)

wherein R is lower alkyl of 1 to 4 carbon atoms inclusive or a pharmaceutically acceptable acid addition salt thereof.

4,241,064

9H-PYRIDO[3,4-B]INDOLE DERIVATIVES

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi; Yoshitsugu Nomiyama, both of Kyoto; Tatsuhiko Kono, Suita; Masato Matsuda, Takatsuki, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

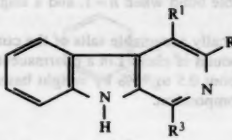
Filed Oct. 10, 1979, Ser. No. 83,419

Claims priority, application Japan, Oct. 14, 1978, 53-126352

Int. Cl.³ C07D *471/04;* A61K *31/395*

U.S. Cl. 424—256 **14 Claims**

1. A compound of the formula:

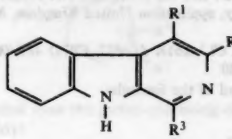


wherein

one of R^1 and R^2 is hydrogen and the other is hydroxy or $—OR^4$ wherein R^4 is alkanoyl of 2 to 7 carbon atoms, tosyl or mesyl, and

R^3 is hydroxymethyl, formyl, carboxy or carbalkoxy wherein alkoxy contains 1 to 6 carbon atoms.

14. The method of inhibiting uric acid formation in humans and other animals through inhibition of xanthine oxidase which comprises administering thereto an effective amount of a compound of the formula:



wherein

one of R^1 and R^2 is hydrogen and the other is hydrogen, hydroxy or $—OR^4$ wherein R^4 is alkanoyl of 2 to 7 carbon atoms, tosyl or mesyl, and

R^3 is hydroxymethyl, formyl, carboxy or carbalkoxy wherein alkoxy contains 1 to 6 carbon atoms.

4,241,065

FLUORO ANALOGS OF HYDROCODONE AND OXYCODONE USEFUL AS ANALGESICS, NARCOTIC ANTAGONISTS OR BOTH

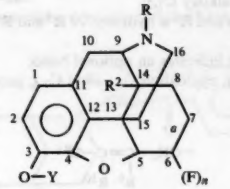
George A. Boswell, Jr., and Rosetta M. Henderson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 944,197, Sep. 19, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,225

Int. Cl.³ A61K *31/485;* C07D *489/00*

U.S. Cl. 424—260 **19 Claims**

1. A compound of the formula



I

wherein

R is selected from the group consisting of hydrogen, alkyl of 1–10 carbons, allyl, methylallyl, dimethylallyl, cycloalkylmethyl of 4–7 carbon atoms, 2-furanylmethyl, 2-tetrahydrofuranylmethyl, 2-thienylmethyl, 2-thienylethyl and phenylethyl which may be ring substituted with chloro, bromo, fluoro, methoxy or 1–3 carbon alkyl substituents;

Y is H or R';

R' is selected from the group consisting of alkyl of 1–4 carbons and alkanoyl of 1–12 carbons;

R^2 is selected from the group consisting of hydrogen, hydroxy and alkanoate of 1–4 carbons;

n is 1 or 2; and

a is a 6,7 double bond when n=1, and a single bond when n=2;

and pharmaceutically acceptable salts of the compound.

15. The compound of claim 1 in a pharmaceutical carrier in an amount of about 0.5 to 95% by weight based on the total weight of the composition.

4,241,066

14-AMINO DERIVATIVES OF MORPHINE, METHODS OF MAKING THEM AND ANALGESIC COMPOSITIONS CONTAINING THEM

Ryszard J. Kobylecki, Patrington; Ian G. Guest, Burstwick; John W. Lewis, North Ferriby, all of England, and Gordon W. Kirby, Glasgow, Scotland, assignors to Reckitt & Colman Products Limited, London, England

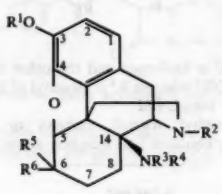
Filed Mar. 15, 1978, Ser. No. 886,833

Claims priority, application United Kingdom, Mar. 23, 1977, 12325/77

Int. Cl.[2] A61K *31/485*; C07D *489/06*

U.S. Cl. 424—260 17 Claims

1. A compound of the formula:



(I)

wherein

R^1 is hydrogen

R^3 is hydrogen, alkyl C_{1-12}, alkenyl C_{3-8}, cycloalkyl C_{3-7} alkyl C_{1-4}, Ar-alkyl C_{1-5} or Ar-alkenyl C_{3-5}, provided that R^3 does not contain the system — CH=CH — attached to the nitrogen atom at position 14;

R^4 is hydrogen, alkyl C_{1-8} or the group COR^7 in which

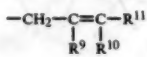
R^7 is hydrogen, alkyl C_{1-11}, alkenyl C_{2-7}, Ar, Ar-alkyl C_{1-5}, Ar-alkenyl C_{2-5}, cycloalkyl C_{3-8}, cycloalkyl C_{3-8} alkyl C_{1-3}, O-alkyl C_{1-4} or O-Ar;

Ar is phenyl or phenyl substituted by halogen, alkyl C_{1-3}, hydroxy or alkoxy C_{1-3};

R^5 is hydrogen and R^6 is hydroxy; or R^5 and R^6 are together oxygen;

the dotted line indicates an optional bond;

R^2 is hydrogen, cycloalkyl C_{3-7} alkyl C_{1-4}, propargyl or the group



in which R^9, R^{10} and R^{11} are hydrogen, methyl or chlorine; and its pharmaceutically acceptable salts.

12. A process for the preparation of a compound of Formula I as claimed in claim 1 wherein R^1 is hydrogen which process comprises treating a compound of Formula I in which R^1 is methyl with boron tribromide at a temperature in the range of from −30° to −10° C.

15. A pharmaceutical composition for the relief of pain which comprises at least one compound as claimed in claim 1 or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable diluent or carrier.

4,241,067

14-AMINO DERIVATIVES OF MORPHINE, METHODS OF MAKING THEM AND ANALGESIC COMPOSITIONS CONTAINING THEM

Ryszard J. Kobylecki, Patrington; Ian G. Guest, Burstwick; John W. Lewis, North Ferriby, all of England, and Gordon W. Kirby, Glasgow, Scotland, assignors to Reckitt & Colman Products Limited, London, England

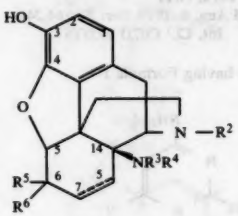
Filed Mar. 15, 1978, Ser. No. 886,834

Claims priority, application United Kingdom, Mar. 23, 1977, 12342/77

Int. Cl.[3] A61K *31/485*; C07D *489/06*

U.S. Cl. 424—260 17 Claims

1. A compound of the general formula:



(I)

wherein

R^2 is methyl or Ar-alkyl C_{1-5};

R^3 is hydrogen, alkyl C_{1-12}, alkenyl C_{3-8}, cycloalkyl C_{3-7} alkyl C_{1-4}, Ar-alkyl C_{1-5} or Ar-alkenyl C_{3-5}, provided that R^3 does not contain the system —CH=CH—attached to the nitrogen atom at position 14;

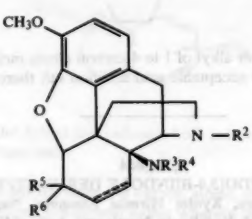
R^4 is hydrogen, alkyl C_{1-8} or the group COR^7 in which R^7 is hydrogen, alkyl C_{1-11}, alkenyl C_{2-7}, Ar, Ar-alkyl C_{1-5}, Ar-alkenyl C_{2-5}, cycloalkyl C_{3-8} or cycloalkyl C_{3-8} alkyl C_{1-3};

Ar is phenyl or phenyl subtituted by halogen, alkyl C_{1-3}, hydroxy or alkoxy C_{1-3};

R_5 is hydrogen and R^6 is hydroxy; or R^5 and R^6 are together oxygen;

the dotted line indicates an optional bond; and its pharmaceutically acceptable salts.

12. A process for the preparation of a compound as claimed in claim 1 which process comprises treating a compound of the general Formula II:



(II)

in which R^2,R^3,R^4,R^5,R^6 and the dotted line are as defined in claim 1. with boron tribromide at a temperature in the range of from −30° to −10° C.

15. A pharmaceutical composition for the relief of pain which comprises at least one compound as claimed in claim 1, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable diluent or carrier.

4,241,068

2-(PYRIDYL-AMINO)-BENZOIC ACIDS AND SALTS THEREOF

Kurt Schromm, Ingelheim; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Armin Fügner, both of Ingelheim, and Volker Jacobi, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

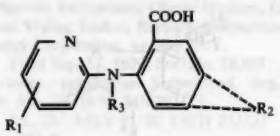
Continuation of Ser. No. 929,664, Jul. 31, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,355

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735919

Int. Cl.[3] A61K *31/44, 31/455;* C07D *213/74, 213/80*

U.S. Cl. 424—263 6 Claims

1. A compound of the formula



wherein

R_1 is (a) hydrogen, lower alkyl or lower alkoxy, or (b) —CO—R_4, tetrazol-5-yl or cyano in the 4- or 5-position;

R_2 is —CO—R_4, tetrazol-5-yl, cyano or, when R_1 has one of the meanings included in (b), also hydrogen, lower alkyl, lower alkoxy or a fused benzene ring;

R_3 is hydrogen or lower alkanoyl; and

R_4 is hydroxyl, amino, hydroxy-amino, tetrazol-5-yl-amino or lower alkoxy;

an internal salt thereof, or a non-toxic salt thereof formed with a basic substance.

6. The method of preventing or relieving allergic reaction in a warm-blooded animal in need thereof, which comprises perorally, parenterally, topically or by the respiratory route administering to said animal an effective antiallergic amount of a compound of claim 1.

4,241,069

3-METHYLENE FLAVANONES AND 3-METHYLENE CHROMANONES

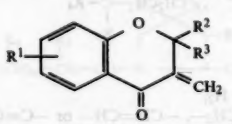
Robert T. Buckler, Edwardsburg, Mich.; Frederick E. Ward, and David L. Garling, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 4, 1979, Ser. No. 72,105

Int. Cl.[2] C07D *405/04;* A61K *31/35, 31/44;* C07D *311/28*

U.S. Cl. 424—263 26 Claims

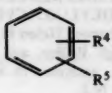
23. A method for inhibiting the growth of microorganisms which comprises applying to the locus to be inhibited an antimicrobially effective amount of a compound having the structural formula:



and pharmacologically acceptable, non-toxic salts thereof wherein:

R^1 is a member selected from the group consisting of hydrogen, Br, CH_3 and OCH_3;

R^2 is selected from the group consisting of hydrogen and and

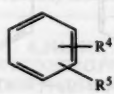


wherein

R^4 is a member selected from the group consisting of hydrogen, Br, Cl, CH_3, OCH_3, NO_2, $N(CH_3)_2$, $C(CH_3)_3$ and CH; R^5 is selected from the group consisting of hydrogen and Cl, with the proviso that when R^5 is Cl, R^4 is hydrogen or Cl; and

R^3 is selected from the group consisting of hydrogen, phenyl, 2-thienyl, 4-pyridyl and naphthyl, with the proviso that when R^3 is naphthyl, R^1 and R^2 are hydrogen.

25. A method as claimed in claim 23 wherein R^1, R^4 and R^5 are hydrogen; R^2 is



and R^3 is selected from the group consisting of phenyl, 2-thienyl and 4-pyridyl.

4,241,070

ANALGESIC BENZOMORPHAN DERIVATIVES

Junki Katsube, Toyonaka; Hiroyuki Mizote; Shuichi Harada, both of Ibaragi, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

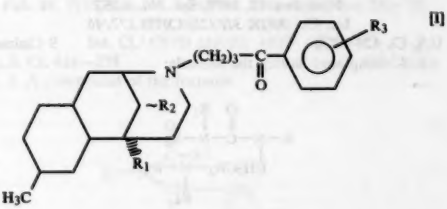
Filed Oct. 27, 1976, Ser. No. 736,072

Claims priority, application Japan, Nov. 6, 1975, 50/133868

Int. Cl.[3] A61K *31/445;* C07D *221/26*

U.S. Cl. 424—267 10 Claims

1. A benzomorphan derivative of the formula:



[I]

wherein R_1 and R_2 are each independently hydrogen or C_1–C_3 alkyl; and R_3 is hydrogen, halogen or C_1–C_3 alkyl, or its non-toxic, pharmaceutically acceptable acid addition salt.

10. A method for relieving a patient from pain which comprises administering an analgesically effective amount of a benzomorphan derivative as claimed in claim 1 alone or in combination with a pharmaceutically acceptable carrier or diluent.

4,241,071
ANTIDEPRESSANT (α-PHENYL-2-TOLYL)AZACYCLOALKANES

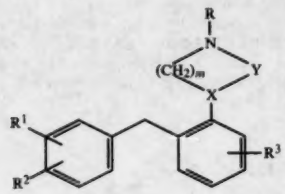
Lawrence L. Martin, Lebanon; Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, and Charles A. Crichlow, Piscataway, all of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 763,294, Jan. 27, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,791

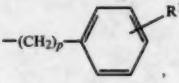
Int. Cl.[3] A61K *31/445;* C07D *211/10, 211/22;* A61K *31/40*

U.S. Cl. 424—267 24 Claims

1. A compound of the formula



wherein X is CH; Y is $-(CH_2)_n-$; R is hydrogen, loweralkyl, phenylloweralkyl of the formula



or cycloalkylloweralkyl in which the cycloalkyl portion contains from 3 to 6 carbon atoms; R^1, R^2 and R^3 are the same or different and each can be hydrogen, halogen, alkoxy of from 1 to 2 carbon atoms, loweralkyl, hydroxy or trifluoromethyl; m is the integer 1 or 2; n is the integer 1, 2 or 3; the sum of m and n is 3 or 4; p is the integer 1, 2, 3 or 4; or a pharmaceutically acceptable acid addition salt thereof.

23. A method for treatment of depression which comprises administering to a depressed patient a pharmaceutically effective amount of an anti-depressant compound defined in claim 1.

4,241,072
SUBSTITUTED UREAS AND PROCESSES FOR THEIR PREPARATION

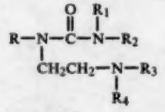
William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 18, 1979, Ser. No. 4,252

Int. Cl.[3] A61K *31/425;* C07D *277/46*

U.S. Cl. 424—270 9 Claims

1. A compound having the formula:



wherein

R is a thiazole which may be substituted with one, or two loweralkyl group; and

R_1, R_2, R_3 and R_4 are independently loweralkyl and the pharmaceutically acceptable acid addition salts thereof.

8. A method for the inhibition of gastric acid secretions which comprise administering to a subject with excess gastric acid secretions an effective amount of a compound of claim 1.

4,241,073
TREATMENT OF IMMEDIATE HYPERSENSITIVITY DISEASES WITH ARYL HYDANTOINS

William B. Jamieson, Woking; William J. Ross, Lightwater; Robin G. Simmonds, Wokingham, and John P. Verge, Henley-on-Thames, all of England, assignors to Lilly Industries Limited, London, England

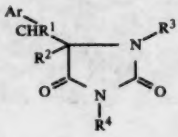
Filed May 14, 1979, Ser. No. 39,075

Claims priority, application United Kingdom, May 23, 1978, 21352/78

Int. Cl.[3] A61K *31/415*

U.S. Cl. 424—273 R 3 Claims

1. A method of treating a mammal, including a human, for an immediate hypersensitivity condition by administering an effective amount of a compound of the formula



wherein

Ar is phenyl optionally substituted by up to three radicals selected from the group comprising C_1–C_6 alkoxy, halogen, 1,3-dioxol-2-yl, hydroxy C_1–C_4 alkoxy C_1–C_4 alkyl, phenyl, hydroxyl, nitrile, C_1–C_4 haloalkyl, C_1–C_4 alkyl, C_2–C_4 alkenyloxy, C_1–C_4 alkoxycarbonyl or phenoxy optionally substituted by C_1–C_4 haloalkyl, C_1–C_4 alkoxy or halogen;

or is thiophene optionally substituted by phenyl or by one or two C_1–C_4 alkyl groups;

R^1 and R^2 are independently hydrogen or taken together represent a chemical bond;

R^3 is hydrogen, C_1–C_6 alkyl or C_2–C_4 alkenyl; and

R^4 is C_1–C_6 alkyl, C_2–C_4 alkenyl, phenyl or benzyl.

4,241,074
PROSTAGLANDIN ANALOGUES

Frederick Cassidy, and Alexander C. Goudie, both of Harlow, England, assignors to Beecham Group Limited, Great Britain

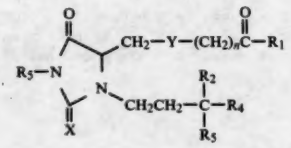
Filed Jun. 14, 1979, Ser. No. 48,514

Claims priority, application United Kingdom, Jun. 15, 1978, 27019/78

Int. Cl.[3] C07D *233/40;* A61K *31/415*

U.S. Cl. 424—273 R 40 Claims

1. A compound selected from the group consisting of a hydantoin derivative of the formula:



wherein

X is O, S or H_2;

Y is $-CH_2CH_2-$, $-CH{=}CH-$ or $-C{\equiv}C-$;

n has a value of 1 to 7;

R_1 is alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, alkanoyloxy of 1 to 4 carbon atoms or benzyl;

R_4 is alkyl of 1 to 9 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 3 to 8 carbon atoms, or

R_2 and R_4, together with the carbon atom to which they are attached, are cycloalkylidene of 5 to 8 carbon atoms; and

R_5 is hydrogen or alkyl of 1 to 6 carbon atoms;

and the pharmaceutically acceptable acid addition salts thereof when X is H_2.

40. A method for the treatment in humans or animals of conditions responsive to natural prostaglandins, which comprises administering to a human or animal in need thereof an effective amount of a compound according to claim 1.

4,241,075
ACARICIDAL 1-ALKYLTHIO-SUBSTITUTED AND 1-PHENYLTHIO SUBSTITUTED 2-(PHENOXYALKYL)-2-IMIDAZOLINES

Manfred Böer, Weil am Rhein, Fed. Rep. of Germany; Jozef Drabek, Oberwil, Switzerland; Günter Mattern, Liestal, Switzerland, and Walter Traber, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

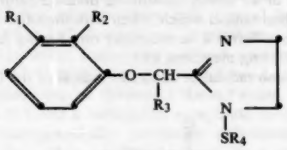
Filed Sep. 17, 1979, Ser. No. 76,107

Claims priority, application Switzerland, Sep. 27, 1978, 10086782/78; Apr. 24, 1979, 3836792/79

Int. Cl.³ A01N *43/50*; C07D *233/22*

U.S. Cl. 424—273 R **14 Claims**

1. A compound of the formula I



(I)

wherein R_1 and R_2 are each chlorine or methyl, R_3 is hydrogen or C_1–C_4-alkyl and R_4 is C_1–C_6-alkyl optionally mono-substituted by cyano or is phenyl optionally mono- or di-substituted by halogen and/or methyl.

8. A method of controlling pests of the order Acarina at a locus, which method comprises applying to said locus an acaricidally effective amount of a compound of the formula I as defined in claim 1.

4,241,076
HALOGENATED SUBSTITUTED MERCAPTOACYLAMINO ACIDS

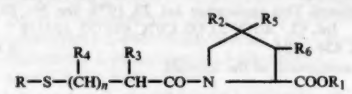
Miguel A. Ondetti, Princeton, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 939,148, Sep. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 879,032, Feb. 21, 1978, abandoned. This application May 9, 1979, Ser. No. 37,255

Int. Cl.³ A61K *31/40*; C07D *207/16*

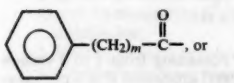
U.S. Cl. 424—274 **38 Claims**

1. A compound of the formula

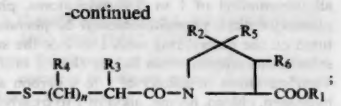


wherein

R is hydrogen, lower alkanoyl,



-continued



;

m is zero, one, or two;

R_1 is hydrogen or lower alkyl;

R_2, R_5 and R_6 each is hydrogen or halogen;

R_3 is hydrogen, lower alkyl, halogen or trifluoromethyl provided that when n is zero R_3 is other than halogen;

R_4 is hydrogen, lower alkyl or trifluoromethyl; and n is 0 or 1; with the provisos that at least one of R_2, R_3, R_4, R_5 and R_6 as defined above is a halogen and that only R_2 and R_5 can both be halogen in the same compound; and basic salts thereof.

38. A composition useful for alleviating hypertension in a hypertensive mammal comprising from about 10 to 500 mg. of a compound of claim 1 or physiologically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,241,077
β-OXO-3-THIOPHENEPROPIONITRILE AND β-AMINO-2-(3)-THIOPHENEACRYLONITRILES

John W. Hanifin, Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 936,443, Aug. 24, 1978, Pat. No. 4,189,436, which is a continuation-in-part of Ser. No. 853,980, Nov. 22, 1977, abandoned. This application Aug. 8, 1979, Ser. No. 64,673

Int. Cl.³ A61K *31/38*

U.S. Cl. 424—275 **4 Claims**

1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of a compound selected from the group consisting β-amino-2-thiopheneacrylonitrile, β-amino-3-thiopheneacrylonitrile, β-oxo-3-thiophenepropionitrile and the pharmacologically acceptable cationic salt thereof.

4,241,078
FUNGICIDAL 3-(N-ACYL-N-ARYLAMINO)-GAMMA-BUTYROLACTONES AND GAMMA-BUTYROTHIOLACTONES

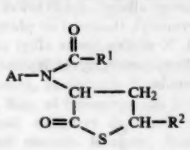
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 847,502, Nov. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 837,121, Sep. 29, 1977, Pat. No. 4,141,989, which is a continuation-in-part of Ser. No. 731,491, Oct. 12, 1976, Pat. No. 4,107,323, which is a continuation-in-part of Ser. No. 631,351, Nov. 12, 1975, Pat. No. 4,012,519, which is a continuation-in-part of Ser. No. 548,660, Feb. 10, 1975, Pat. No. 3,933,860. This application May 29, 1979, Ser. No. 42,818

Int. Cl.³ C07D *333/36*; A01N *43/10*

U.S. Cl. 424—275 **11 Claims**

1. A compound of the formula



(I)

wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^1 is hydroxymethyl, halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo, alkoxymethyl of 1 to 6 carbon atoms,

alkylthiomethyl of 1 to 6 carbon atoms, phenylthiomethyl, phenoxymethyl, phenylthiomethyl or phenoxymethyl substituted on the phenyl ring with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and R^2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo and alkyl of 1 to 6 carbon atoms.

8. A method for the control of fungi which comprises contacting said fungi or their habitats with a fungicidally effective amount of a compound of the formula defined in claim 1.

11. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound of the formula defined in claim 1.

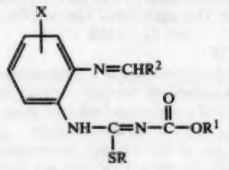
4,241,079

2-IMINO SUBSTITUTED ISOTHIOUREIDOBENZENE

Edward E. Kilbourn, Chalfont, and W. David Weir, Levittown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 4, 1978, Ser. No. 902,623
Int. Cl.³ A01N *9/14;* **C07D** *149/243*
U.S. Cl. 424—285 **50 Claims**

1. A compound of the formula:



wherein

R is alkyl, alkenyl, alkynyl, polynuclear aralkyl, mononuclear aralkyl, mononuclear aryloxy lower alkyl, cycloalkylalkyl, cyano lower alkyl, hydroxy lower alkyl, aralkenyl, alkoxylakyl, alkoxycarbonylalkyl, phthalimido lower alkyl or phenoxycarbonylalkyl;

R^1 is alkyl or lower alkoxyalkyl;

R^2 is alkyl or substituted or unsubstituted mononuclear aryl of from 4 to 6 nuclear carbon atoms, polynuclear aryl of from 10 to 14 carbon atoms and heteroaryl of from 5 to 6 nuclear atoms containing from 1 to 3 heteroatoms selected from oxygen, nitrogen or sulfur where the substituent is selected from halo, lower alkyl, lower alkoxy, di-lower alkyl amino, lower alkanoylamino, phenoxy, benzyloxy, 3,4-lower alkylenedioxyphenyl, phenylthio lower alkyl, cyano, nitro, alkylthio or phenylthio and X is hydrogen, nitro, halo, lower alkoxy, lower alkanoyl, lower alkyl, thiocyanato, a radical of the formula: Y—S(O)n wherein Y is lower alkyl, lower alkenyl, cyclo lower alkyl, pyridyl, thienyl, furyl, pyrimidyl, thiazolyl or phenyl and n is an integer of 0 to 3, X is also lower alkyl carbonylamino, lower alkoxy carbonylamino, cycloalkylcarbonylamino, a radical of the formula:

wherein Y' is phenyl, cyclo lower alkyl, pyridyl, 2-thienyl or furyl, a radical of the formula: Y"O wherein Y" is lower alkyl, lower alkenyl, mononuclear aralkyl, pyridyl, 2-thienyl or furyl and the nontoxic, pharmaceutically acceptable acid addition salts and amides.

4,241,080

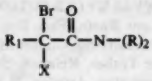
STABILIZED AQUEOUS ANTIMICROBIAL COMPOSITION

George A. Burk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 860,498, Dec. 14, 1977, abandoned. This application May 29, 1979, Ser. No. 43,064
Int. Cl.³ A01N *37/18, 37/34, 43/36, 43/40*
U.S. Cl. 424—304 **20 Claims**

1. An aqueous antimicrobial composition having a pH from about 2 to about 5 and comprising:

(a) an alpha-halogenated amide antimicrobial compound of the formula:

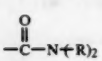


wherein:

X is hydrogen, halogen or a cyano radical;

each R group is independently hydrogen, a monovalent saturated hydrocarbon radical or an inertly substituted monovalent saturated hydrocarbon radical or the two R groups are jointly a divalent saturated hydrocarbon radical or an inertly substituted divalent saturated hydrocarbon radical which, taken with the adjacent nitrogen atom, forms a heterocyclic ring having from 4 to about 10 ring members; and

R_1 is a cyano radical or an amido radical of the formula:



wherein R is as hereinbefore defined;

(b) a water-miscible organic solvent in an amount sufficient to dissolve the halogenated amide antimicrobial, said solvent being a normally liquid polyalkylene glycol of the ethylene, trimethylene or tetramethylene series or a mono- or di-saturated hydrocarbyl ether thereof;

(c) water; and

(d) a stabilizing amount of an acid stabilizer selected from the group consisting of acetic acid and ethylenediaminetetraacetic acid, said stabilizing amount being an amount sufficient to measurably reduce the decomposition of the halogenated amide antimicrobial in the aqueous composition.

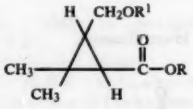
4,241,081

CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 953,987, Oct. 23, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,854
Int. Cl.³ A01N *53/00;* **C07C** *69/757, 121/75*
U.S. Cl. 424—304 **8 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group containing from 1 to 3 carbon atoms, a benzyl group or an acetyl group and R is 3-phenoxy-

benzyl or α-cyano-3-phenoxybenzyl with the proviso that when R is α-cyano-3-phenoxybenzyl then alcohol moiety is in the R,S-racemic or the S-optical configuration.

8. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim 1.

4,241,082

AGENTS FOR PROMOTING REPRODUCTIVE ABILITY OF DOMESTIC ANIMALS

Yoshihiko Baba, and Hiroyoshi Horikoshi, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,266

Claims priority, application Japan, Sep. 2, 1977, 52-105702; Jan. 27, 1978, 53-7996

Int. Cl.³ A61K *31/24, 31/22, 31/195*

U.S. Cl. 424—309 **13 Claims**

1. A veterinary composition for promoting a reproductive ability of a domestic animal suffering from a reproductive disorder which contains an active component in an amount effective to promote said reproductive ability,

said active ingredient comprising component (i) L-3,4-dihydroxyphenylalanine or a pharmaceutically acceptable substituted L-3,4-dihydroxyphenylalanine, and component (ii) at least one amino acid selected from the group consisting of L-arginine, L-ornithine, L-lysine, D-phenylalanine, L-glutamic acid and γ-aminobutyric acid, the ratio of said amino acid to said said L-3,4-dihydroxyphenylalanine or derivative thereof being between 1:10 and 10:1, and a veterinarily acceptable carrier

said pharmaceutically acceptable substituted L-3,4-dihydroxyphenylalanine being selected from the group consisting of

3,4-diacetyloxy-L-phenylalanine hydrochloride,

3,4-dipivalyloxy-L-phenylalanine perchlorate,

3,4-dihydroxy-L-phenylalanine methyl ester hydrochloride,

3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,

3,4-dihydroxy-L-phenylalanine benzyl ester hydrochloride,

3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,

glycyl-3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,

3,4-dipivalyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine pivaloyloxymethyl ester,

3,4-dipivalyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine potassium salt,

3,4-diacetyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine potassium salt,

N-formyl-3,4-dipivalyloxy-L-phenylalanine,

N-formyl-3,4-dipivalyloxy-L-phenylalanine pivalyloxy-L-phenylalanine pivaloyloxymethyl ester,

N-formyl-3,4-diacetyloxy-L-phenylalanine,

N-formyl-3,4-diacetyloxy-L-phenylalanine potassium salt,

glycyl-3,4-diacetyloxy-L-phenylalanine hydrochloride,

3,4-diacetyloxy-L-phenylalanylglycine hydrochloride,

3,4-dihydroxy-L-phenylalanyl-3,4-dihydroxy-L-phenylalanine hydrochloride,

3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,

3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,

L-tyrosyl-3,4-dihydroxyphenylalanine,

glycyl-3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,

L-leucyl-3,4-dihydroxyphenylalanine, and

L-3,4-dihydroxyphenylalanine-D-alanine.

4,241,083

GERMICIDAL COMPOSITION FOR AGRICULTURE AND HORTICULTURE

Yukiteru Morikawa, Yokohama, and Hideo Nishikawa, Ibaraki, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

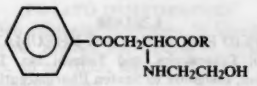
Filed Oct. 26, 1979, Ser. No. 88,652

Claims priority, application Japan, Oct. 27, 1978, 53-132933; Aug. 25, 1979, 54-108387

Int. Cl.³ A01N *37/10;* **C07C** *101/02, 101/30*

U.S. Cl. 424—309 **7 Claims**

1. A germicidal composition for agriculture and horticulture which comprises as an active ingredient a germicidally effective amount of a 2-(2-hydroxyethylamino)-3-benzoylpropionate or a salt thereof represented by the general formula:



wherein R a is lower alkyl group, and agriculturally acceptable adjuvants therefor.

4,241,084

ANTIBACTERIAL AND ANTIFUNGAL COMPOSITIONS

Maurice M. Minuto, 15 Hemingway Dr., Dix Hills, N.Y. 11746

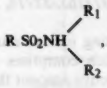
Continuation-in-part of Ser. No. 39,757, May 17, 1979, abandoned. This application Aug. 30, 1979, Ser. No. 71,311

Int. Cl.³ A61K *31/18, 31/225*

U.S. Cl. 424—313 **16 Claims**

1. A pharmaceutical composition having antibacterial and antifungal activity, which composition consists essentially of:

(a) from about 50 weight percent to about 90 weight percent of a first ingredient selected from the sulfonamides represented by the general formula



wherein R is an alkyl, aryl, alkaryl or aralkyl radical in which the alkyl moiety contains 1 to 4 carbon atoms; R_1 and R_2 each is hydrogen or an alkyl radical containing 1 to 8 carbon atoms,

(b) from about 1 weight percent to about 30 weight percent of a second ingredient selected from the group consisting of alkylene glycol and 2-ethyl 1,3-hexanediol, wherein the alkylene radical contains 5 to 8 carbon atoms, and

(c) from about 1 weight percent to about 10 weight percent of a third ingredient selected from the group consisting of alkylene glycol ester of a dicarboxylic acid wherein said alkylene radical contains 2 to 4 carbon atoms and said dicarboxylic acid is selected from the group consisting of adipic acid, glutaric acid and sebacic acid.

4,241,085

FODDER FOR RUMINANTS

Rudolf Fahnenstich, Strötzbach; Joachim Heese, Grossauheim, both of Fed. Rep. of Germany, and Dyfed Lewis, Loughborough, England, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

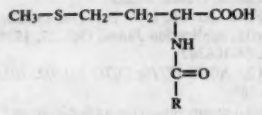
Continuation of Ser. No. 852,706, Nov. 18, 1977, abandoned, which is a division of Ser. No. 330,110, Feb. 16, 1973, Pat. No. 4,093,740. This application Mar. 12, 1979, Ser. No. 19,406

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **5 Claims**

1. A process of feeding ruminants which are cattle having a

paunch containing a microflora of bacteria and protozoa which normally break down added synthetic aminoacids comprising feeding them fodder which goes to the paunch, said fodder containing an N-acyl-methionine of the formula:



where R is a aliphatic hydrocarbon having 7 to 21 carbon atoms as a source of methionine which is not broken down in said paunch.

4,241,086

METHOD FOR TREATING RHEUMATISM

Jun-ichi Iwao, Takarazuka, and Tadashi Iso, Tondabayashi, both of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,330

Claims priority, application Japan, Oct. 11, 1978, 53-125537

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **2 Claims**

1. A method for treating rheumatism and arthritis in a mammal afflicted with at least one of the said conditions comprising administering to said mammal an effective dose of N-(2-mercapto-2-methylpropanoyl)-L-cysteine or a pharmacologically acceptable salt thereof.

4,241,087

DYSMENORRHEA TREATMENT

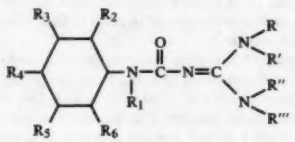
Ghulam N. Mir, Buckingham; Jacqueline B. Krebs, Huntingdon Valley, and William L. Studt, Harleysville, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Apr. 2, 1979, Ser. No. 26,281

Int. Cl.³ A61K *31/165, 31/16, 31/33, 31/155*

U.S. Cl. 424—324 **18 Claims**

1. A method for treating uterine muscle spasms associated with dysmenorrhea which comprises the oral or parenteral administration of an effective amount therefor of an amidinourea of the general formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
- hydrogen,
- halo,
- lower alkyl,
- halo lower alkyl,
- nitro,
- lower alkoxy
- hydroxy,
- aryllower alkoxy,
- acyloxy,
- cyano,
- halo lower alkoxy or
- lower alkyl sulfonyl;

R and R′ are hydrogen or lower alkyl;

R″ and R‴ are
- hydrogen,
- lower alkyl,
- lower alkoxy,
- lower alkenyl,
- cyclo alkenyl up to 9 carbon atoms,
- cyclo alkyl lower alkyl,
- lower alkyl,
- cyclo alkyl,
- aralkyl,
- lower alkynyl,
- halo alkyl,
- hydroxy alkyl,
- alkoxy alkyl,
- cyano alkyl,
- amino alkyl,
- mono- and di- lower alkyl amino alkyl
- carbamoyl alkyl,
- mono- and di-carbamoyl alkyl,
- carboxy alkyl,
- alkoxy carbonyl alkyl,
- aralkoxy carbonyl alkyl,
- acyl,
- acylalkyl,
- alkylsulfonyl or
- aralkyl sulfonyl;

R″ and R‴ together may form a 5 to 7 atom ring which may include 0 to 2 hetero atoms of N, O or S;

R_1 is hydrogen or lower alkyl provided at least one of R, R′, R″, and R‴ is other than hydrogen; and the pharmaceutically-acceptable salts thereof.

4,241,088

1-(TRIALKYLAMINO)-3-(PHENYLPHENOXY)-2-PROPANOL QUARTERNARY SALTS

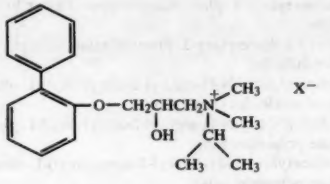
Raymond E. Counsell, and Benedict R. Lucchesi, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 623,767, Oct. 20, 1975, abandoned. This application Mar. 24, 1977, Ser. No. 780,880

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—329 **2 Claims**

1. A pharmaceutical composition which comprises a therapeutically effective anti-arrhythmic amount of a compound of the formula



wherein X^- is a chloride, bromide, iodide, fluoride, sulphate, alkylsulphate, or ortho, meta or pyrophosphate anion.

4,241,089

FEEDSTUFF FOR LIVESTOCK AND MANUFACTURING THEREOF

Alain Regnault, Par Ornet, and Jean-Pierre Sachetto, St. Julien-en-Genevois, both of France, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jun. 8, 1978, Ser. No. 913,834

Claims priority, application Switzerland, Jun. 10, 1977, 7159/77

Int. Cl.³ A23K *1/16*

U.S. Cl. 426—2 **5 Claims**

1. Feedstuff for livestock comprising about 90 to 95 percent by weight of carbohydrates and about 2 to 10 percent by weight of a urea derivative, the latter being a crystallized glucosylurea the purity of which is at least 90% and the total

chemically unbound urea and glucose of which does not exceed 10% by weight.

4,241,090

NON-ADHESIVE CHEWING GUMS AND METHOD

John J. Stroz, Monroe, Conn.; Abraham I. Bakal, Parsippany, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,756
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—4 11 Claims

1. A chewing gum having non-adhesive properties comprising gum base, sweetener, flavoring and from about 1 to about 15% by weight of alpha-cellulose a non-adhesive-imparting slip agent to improve chewing quality, impart non-adhesive properties to said gum and increase cud size of said gum, said chewing gum further including from 1 to about 30% by weight water, and from 0.2 to about 3% by weight of a thickener, said thickener being hydrolyzed cereal solids, malto-dextrin, modified food starch, low D.E. corn syrup solids, alginates, carrageenan, xanthan gum, gelatin, carob, tragacanth, locust bean, and other water-soluble gums, or carboxymethyl cellulose.

4,241,091

CALORIE-FREE NON-ADHESIVE CHEWING GUMS AND METHOD

John J. Stroz, Monroe, Conn.; Abraham I. Bakal, Parsippany, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,757
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—4 15 Claims

1. A substantially calorie-free carbohydrate-free, non-cariogenic chewing gum having non-adhesive properties consisting essentially of gum base, a substantially calorie-free sweetener, flavoring, filler, from about 1 to about 15% by weight of alpha-cellulose as a non-adhesive-imparting slip agent or texturizing agent and bulking agent, and from about 1 to about 40% by weight water, to improve chewing quality, impart non-adhesive properties to said gum and increase cud size of said gum.

4,241,092

GASIFIED CANDY DISPERSED IN A MATRIX OF SORBITOL

Joseph J. Halik, Ossining; Robert J. Ravallo, Mahopac; Gerald S. Wasserman, Spring Valley, all of N.Y., and Alfred C. Glatz, Stamford, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,482
Int. Cl.[3] A23G *3/00*
U.S. Cl. 426—96 37 Claims

1. A confection which comprises:

granules of gasified candy containing 0.5 to 15 cm^3 of gas/-gram of candy dispersed in a hard, binding matrix comprising crystallized sorbitol.

4,241,093

FOOD SUPPLEMENT FROM VEGETABLE PULP AND METHOD OF PREPARING SAME

Souly A. Farag, Moses Lake; John E. Hayes, Seattle, both of Wash., and Lloyd W. Norman, Wahpeton, N. Dak., assignors to U and I, Incorporated, Salt Lake City, Utah

Filed May 11, 1978, Ser. No. 905,059
Int. Cl.[2] A23L *1/277*
U.S. Cl. 426—258 10 Claims

1. A process for producing a bland food supplement from water-extracted, vegetable pulp selected from the group consisting of the water-extracted pulps of sugar beets, apples, citrus peels, corn, beans, peas, and turnips, said process comprising the steps of:

(a) contacting the water-extracted pulp with an aqueous bleaching solution comprising a bleaching agent selected from the group consisting of hydrogen peroxide, an alkali metal peroxide, ammonium persulfate, sulfur dioxide, sodium hydrosulfite, sodium chlorite, sodium hypochlorite, chlorine, chlorine dioxide, and combinations thereof,

(b) separating the bleached pulp from the bleaching solution, and

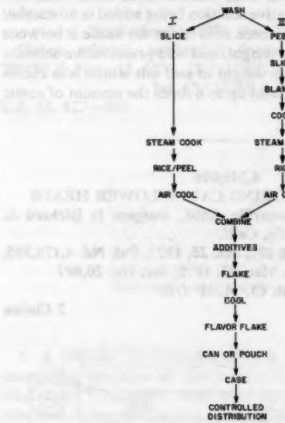
(c) drying the bleached pulp to obtain a stable, free-flowing, bland food supplement having a composition by weight of about 4% to 8% water, about 7% to 9% crude protein, about 15% to 25% crude fiber, about 60% to 70% nitrogen-free extracts, and about 2.5% to 5% ash, wherein said food supplement can be used as a filler, extender, or protein binder in a variety of food products.

4,241,094

POTATO DEHYDRATION

James D. O'Neil, Minneapolis; Gregory M. Granum, Bloomington; Elmars M. Kiploks, and Charles N. Standing, both of Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 11, 1979, Ser. No. 83,885
Int. Cl.[3] A23L *1/216*
U.S. Cl. 426—324 17 Claims



1. A method of producing dehydrated potatoes, said method including:

cleaning a quantity of potatoes;

separating the potatoes into a first group and a second group before or after cleaning with the weight ratio of the first group to the second group being in the range of between about 25:75 to 75:25;

slicing the first group of potatoes;

cooking the thus sliced first group of potatoes an amount sufficient to permit ricing;

ricing the thus cooked first group of potatoes;

peeling the first group of potatoes either before slicing or during ricing;

cooling the thus riced ptatoes to a temperature of less than about 115° F.;

peeling the thus washed second group of potatoes;

slicing the thus peeled second group of potatoes;

blanching the thus sliced second group of potatoes;

cooling the thus blanched second group of potatoes to a temperature of less than about 80° F.;

cooking the thus cooled second group of potatoes an amount sufficient to permit ricing;

ricing the thus cooled second group of potatoes;

cooling the thus riced second group of potatoes to a temperature of less than about 115° F.;

combining and mixing the thus riced and subsequently cooled first group and second group of potatoes; and dehydrating the thus combined and mixed first group and second group of potatoes to a moisture content of less than about 9% by weight.

4,241,095

METHOD FOR PREVENTING SOY SAUCE FROM PUTREFACTION

Kunihiko Shibata, Aichi; Genji Yamaguchi, Nagoya; Kimio Takeda, and Hiroshi Masai, both of Handa, all of Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Filed Dec. 4, 1978, Ser. No. 965,911
Int. Cl.³ A21D *4/00*
U.S. Cl. 426—335 **4 Claims**

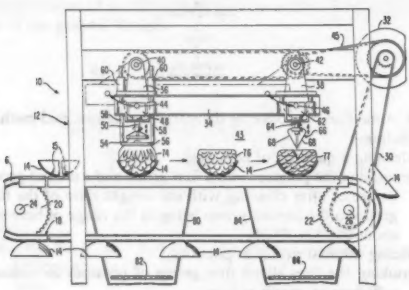
1. A method for preventing soy sauce from spoiling comprising adding to raw uncooked soy sauce before or after sterilization, a preservative solution in an amount sufficient to prevent the soy sauce from spoiling, said preservative solution consisting essentially of (a) acetic acid and (b) a salt selected from the group consisting of the sodium salt, the potassium salt, and the calcium salt of an organic acid selected from the group consisting of acetic acid, malic acid, tartaric acid, citric acid, and lactic acid, said preservative solution being added in an amount such that the content of acetic acid in the soy sauce is between 0.02 and 0.2 percent by weight, and said preservative solution containing an amount by weight of said salt which is in excess of the amount of acetic acid up to 6 times the amount of acetic acid.

4,241,096

METHOD FOR CORING CAULIFLOWER HEADS

Richard A. Shaw, Watsonville, Calif., assignor to Richard A. Shaw, Inc., Watsonville, Calif.

Division of Ser. No. 818,497, Jul. 25, 1977, Pat. No. 4,176,595.
This application Mar. 15, 1979, Ser. No. 20,897
Int. Cl.³ A23P *1/00*
U.S. Cl. 426—484 **3 Claims**



1. A method of coring cauliflower heads having culls comprising: moving a plurality of cauliflower heads along a predetermined path with the base of each head extending upwardly; cutting the culls from the base of each head as it moves along a first part of said path; exerting downward forces on each head through a zone extending circumferentially of the head to hold the head against movement out of said path as the head moves along said first part of the path and as the culls are cut from the base of each head; removing the force from each head after the culls have been cut therefrom; cutting each head as the latter moves along a second part of said path after said force has been removed to cause the head to break up into parts; and collecting the culls and the parts at separate locations.

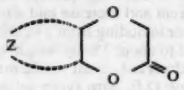
4,241,097

USE OF BENZODIONONES IN AUGMENTING OR ENHANCING THE AROMA AND TASTE OF A FOODSTUFF

Mark A. Sprecker, Sea Bright; John B. Hall, Rumson, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,071
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—536 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.5 ppm up to 20 ppm based on the weight of the foodstuff of a cyclic chemical compound having the structure:



wherein Z is benzo or cyclohexano.

4,241,098

FLAVORING WITH A MIXTURE OF CIS-3-HEXENAL, TRANS-2-HEXENAL, CIS-3-HEXENYL FORMATE, CIS-3-HEXENOL AND CIS-3-HEXENYL-CIS-3-HEXENOATE

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,707
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—534 **1 Claim**

1. Process for augmenting or enhancing the flavor or aroma of a foodstuff by adding to the foodstuff from 0.05 up to about 500 parts per million, of a mixture of cis-3-hexenal, trans-2-hexenal, cis-3-hexenyl formate, cis-3-hexanol and cis-3-hexenyl-cis-3-hexenoate prepared by reacting cis-3-hexenol with pyridinium chlorochromate, the mole ratio of cis-3-hexenol:pyridinium chlorochromate initially in the reaction mass being in the range of from 1:0.5 up to 1:2, the reaction being carried out in a solvent.

4,241,099

PECTIN FORMULATIONS, PRODUCTS AND METHODS HAVING DELAYED-ACTION ACIDULANTS

Peter J. Tiemstra, 6543 Pontiac Dr., LaGrange, Ill. 60525

Filed Feb. 26, 1979, Ser. No. 15,287
Int. Cl.³ A23L *1/06*
U.S. Cl. 426—577 **16 Claims**

1. In a gelled pectin confectionery jellie product prepared from a pre-gelled formulation wherein said formulation includes an aqueous, sugar-containing component, a pectin, and sufficient acidulant to cause said pectin to set said pre-gelled formulation into the gelled product, the improvement comprising: a delayed-action acidulant which gradually introduces hydrogen ions into said formulation over a period of time sufficient to permit deposition of the formulation into a molding container in said pre-gelled state and to bring about in-situ setting of the formulation to said gelled state in said molding container, the pectin confectionery jellie has a sugar solids content above about 76 weight percent, based on the total weight of the product, said pectin is of the high methoxy type with a degree of methylation no lower than about 45 DM, the formulation contains between about 0.5 and about 3 weight percent of said pectin, based on the total weight of the sugar, the formulation contains between about 1 and about 5 weight percent of glucono-deltalactone delayed-action acidulant,

based on the total weight of the sugar, said pre-gelled state has an initial pH of between about 3.8 and about 5.5, and said gelled state has a pH approximately the same as an optimum gelation pH for said pectin.

4,241,100

PROCESS FOR PRODUCING SOYBEAN MILK

Teruo Wakana, Hidaka; Kunio Okubo, Ogose, and Yutaka Hanaoka, Akishima, all of Japan, assignors to Kibun Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 704,920, Jul. 13, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,408
Claims priority, application Japan, Jul. 21, 1975, 50/88441
Int. Cl.³ A23L *2/38*
U.S. Cl. 426—598 **2 Claims**

1. A process for producing soybean milk with no undesirable beany flavor or bitterness which comprises cooking unsoaked soybeans in an aqueous medium at boiling temperature for 2–4 minutes, grinding the cooked soybeans while bringing them into contact with an about 0.1–1% sodium bicarbonate aqueous solution at a temperature above 80° C., extracting protein and water soluble components from the ground soybeans and removing substantially all of the solids from the slurry to obtain soybean milk.

4,241,101

LOW DISSIPATION FACTOR EPOXY COATING POWDER

Howard E. Saunders, Pittsburgh, and James D. B. Smith, Wilkens Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1979, Ser. No. 39,919
Int. Cl.³ C08G *59/42, 59/68*
U.S. Cl. 427—32 **16 Claims**

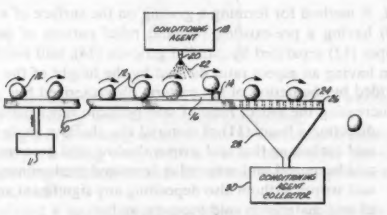
1. A solventless, non-aqueous composition which comprises (A) a solid bisphenol A epoxy resin having an EEW of about 400 to about 8000, a Durran's softening point of at least about 70° C., and less than 30 hydroxyl groups per molecule; (B) about 5 to 40 phr of a solid polyanhydride curing agent at least about 50 mole % of which is trimellitic anhydride; (C) about 0.01 to about 1 phr of a cross-linking agent having the general forma R_3SnX where each R is independently selected from alkyl, aryl, aralkyl, and alkaryl up to C_{20}, and X is selected from acetate, propionate, butyrate, halogen, and hydroxy; (D) about 0.01 to about 5 phr of an accelerator for said curing agent; and (E) about 0.1 to about 5 phr of an activator for said cross-linking agent selected from the group consisting of catechol, pyrogallol, phloroglucinol, and mixtures thereof.

4,241,102

APPARATUS AND METHOD FOR THE SELECTIVE WETTING OF PARTICLES

John R. McKinley, Claremont, and John G. Roeschlaub, Upland, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 4, 1979, Ser. No. 45,186
Int. Cl.² B05B *13/02*; B05C *3/08*; B05D *1/02*
U.S. Cl. 209—3.1 **12 Claims**



6. A method for selectively wetting particles with a selective wetting agent which agent is selective toward at least one component in the particles, coating such particles in an amount dependent upon the amount of such at least one component, the method comprising the steps of:

depositing particles to be wetted onto a horizontally extending surface capable of vibration;

vibrating the surface to impart translatory movement to particles upon the surface;

spraying the particles as the particles move along the surface with a selective wetting agent directed toward the surface;

forming a pool of the selective wetting agent upon the surface by providing a barrier upon the surface across the direction of movement of the particles along the surface such that the particles move through the formed pool;

wetting the particles with the selective wetting agent as the particles move along the surface through the spray and pool of selective wetting agent; and

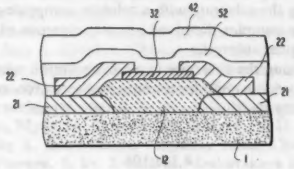
removing excess selective wetting agent from the particles.

4,241,103

METHOD OF MANUFACTURING AN INTEGRATED THERMAL PRINTING HEAD

Toshio Ohkubo; Hidehiko Katoh, and Yuji Kajiwara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,243
Claims priority, application Japan, May 31, 1977, 52-70965[U]; Nov. 15, 1977, 52-153738[U]
Int. Cl.³ H05B *1/00*
U.S. Cl. 427—103 **4 Claims**



1. A process for manufacturing a thermal printing head comprising the steps of: screen-printing in a given pattern an electrically conductive paste over the surface of a dielectric substrate, firing the printed conductive paste to form two or more opposed thick-film lead electrodes over said substrate, screen-printing a dielectric paste between said opposed lead electrodes, firing the printed dielectric paste to form heat-insulating dielectric layer having flat top surface, forming a thin-film resistive layer on a region of the surface of said dielectric layer, forming thin-film electrically conductive members in a manner that said resistive layer be electrically connected to said thick-film lead electrodes, and forming a dielectric protective film over said resistive layer.

4,241,104

PROCESS FOR BONDING CARBON SUBSTRATES USING PARTICLES OF A THERMALLY STABLE SOLID

Christopher J. Torbet, Ann Arbor, Mich., assignor to The Fluorocarbon Company, Anaheim, Calif.

Filed Oct. 16, 1978, Ser. No. 951,333
Int. Cl.² C23C *11/00*
U.S. Cl. 427—113 **11 Claims**

1. The process for bonding carbon substrates using finely divided particles of a thermally stable solid to form a composite product which comprises:

(a) providing finely divided particles of a thermally stable solid in contact with a pair of carbon substrates;

(b) contacting said particles and substrates with a carbonizable gas; and

(c) heating the carbon substrates and the particles in the

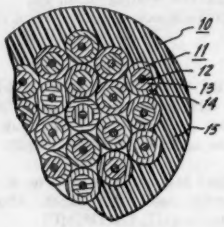
presence of a carbonizable gas which decomposes at elevated temperatures to pyrolytic carbon so that a coating of the pyrolytic carbon is deposited on the surfaces of the carbon substrates and on the particles, thereby bonding the carbon substrates and particles together to form a composite product.

4,241,105

METHOD OF PLATING THE SURFACE OF A SUBSTRATE

William T. Mayweather, Stone Mountain, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,243
Int. Cl.[3] C23C *3/02*
U.S. Cl. 427—125 **31 Claims**



1. A method of plating a dielectric surface of a substrate comprising the steps of:

(a) coating the substrate with a solution comprising a silver-pyridine complex dissolved in a non-aqueous solvent;

(b) drying the substrate;

(c) immersing the substrate in a basic solution whereby the silver-pyridine complex is converted to a silver oxide; and

(d) reducing the silver oxide to metallic silver.

4,241,106

FLOUR TORTILLAS

Orinda L. Tims, Walnut Creek, Calif., assignor to Standard Brands Incorporated, Wilton, Conn.

Filed May 29, 1979, Ser. No. 42,827
Int. Cl.[3] A21D *8/00, 13/00*
U.S. Cl. 426—138 **6 Claims**

1. A tortilla having improved flexibility upon storage comprising wheat flour, water, fat and from about 1 to about 2 percent hydrophilic gum and from about 3 to about 4 percent vital wheat gluten, based on the weight of the flour used.

4,241,107

ROOF COATING PROCESS

Theodore O. Mandish, and Doneath M. Mandish, both of Rte. 2, Box 184, Titusville, Fla. 32780

Filed Apr. 14, 1978, Ser. No. 896,247
Int. Cl.[3] B32B *35/00*
U.S. Cl. 427—140 **9 Claims**

1. A method for coating a roof, said method consisting essentially of the steps of:

preparing the surface of the roof to be coated by applying felt and tar thereto;

placing wire mesh over said felt and tar;

applying a roof coating mixture formed by coating expanded polymer beads with a composition consisting essentially of equal parts, by volume, dehydrated lime and hydrated alumina in combination with water having a wetting agent therein, admixing said coated beads to dry cement and sand in the ratio, by volume, of approximately 7 parts said coated beads, 2 parts said cement and ½ part said sand, and adding thereto approximately 1%, by weight, reinforcing agent and sufficient water to obtain said roof coating mixture of a workable consistency to said prepared roof;

curing said roof coating mixture;

grinding the surface of said cured mixture; and spraying the coated roof with a sealant.

4,241,108

SPRAYABLE TITANIUM COMPOSITION

Chester E. Tracy, South River; Werner Kern, Belle Mead, and Robert D. Vibronek, Sayreville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,167
Int. Cl.[2] C08K *5/05;* **B05D** *1/02, 5/06, 3/02*
U.S. Cl. 427—162 **11 Claims**

1. A composition comprising:

an organometallic titanium compound,

an inert miscible ester diluent therefore, and 2-ethyl-1-hexanol in proportions such that the composition is sprayable to form a uniform film on a substrate.

8. A mehod of applying a uniform thin antireflection coating of titanium oxide on a substrate which comprises:

spraying a composition comprising an organometallic titanium compound, an inert miscible ester diluent therefore, and 2-ethyl-1-hexanol onto said substrate,

drying said composition to remove said diluent and said 2-ethyl-1-hexanol by evaporation,

heating the resultant film in air at an initial temperature at about 70° C. and a final temperature of 350° to 400° C.,

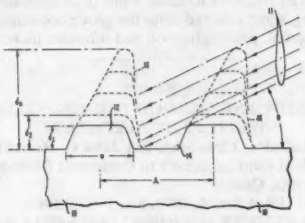
whereby a film of titanium oxide is formed on said substrate having a refractive index of from 2.0 to 2.2.

4,241,109

TECHNIQUE FOR ALTERING THE PROFILE OF GRATING RELIEF PATTERNS

Leo F. Johnson, Bedminster, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1979, Ser. No. 34,591
Int. Cl.[3] B05D *5/06*
U.S. Cl. 427—162 **10 Claims**



1. A method for forming a grating on the surface of a body (**10**) having a pre-existing periodic relief pattern of parallel stripes (**12**) separated by parallel grooves (**14**), said relief pattern having an aspect ratio defined by the height of the stripe divided by the period of the pattern, characterized by:

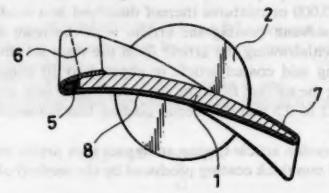
increasing the aspect ratio of said periodic relief pattern by directing a beam (**11**) of material at a shallow angle (θ) to said surface so that said stripes shadow said grooves from said beam and said material is deposited predominantly on said stripes without also depositing any significant amount of said material in said grooves, and

removing a portion of said body under said grooves in order to form said grating.

4,241,110
METHOD OF MANUFACTURING ROTOR BLADE

Masato Ueda, Nagasaki, and Takeshi Andoh, Isahaya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,413
Claims priority, application Japan, Jul. 20, 1978, 53-87738
Int. Cl.³ B05D 1/06, 1/02
U.S. Cl. 427—203 5 Claims



1. A method of manufacturing a rotor blade having a leading edge and a trailing edge and said edges are connected by a curved body having a convex back side and a concave front side which comprises:

making a soft iron-base alloy with good machinability and castability into said blade body with said curved configuration;

joining a hard alloy to the leading edge of said blade body;

providing a coating only on the leading edge and trailing edge surfaces of the convex back side of said blade body; and

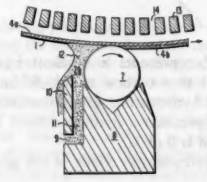
thereafter coating the entire surface of the concave front side of said blade body;

said coatings being provided by first spraying a coating consisting essentially of a Ni-Cr-B-Si alloy onto said surfaces and then spraying a coating consisting essentially of tungsten carbide onto the deposit formed when said Ni-Cr-B-Si is sprayed onto said surfaces and then fusing said coatings onto said surfaces.

4,241,111
PROCESS FOR CONSECUTIVELY COATING BOTH SIDES OF WEB

Ken Hamamura; Masuo Kabutomori; Eiichi Ohta, all of Fujinomiya, and Hiroki Saito, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 11, 1978, Ser. No. 932,969
Claims priority, application Japan, Aug. 11, 1977, 52-96353
Int. Cl.³ B05D 1/00, 5/00
U.S. Cl. 427—211 5 Claims



1. A process for consecutively coating both sides of a continuously traveilling web, said process comprising:

coating a first coating solution onto a first side of a continuously travelling web, to form a first coated layer thereon,

supporting said first coated side of said web by a pressurized gas, and

supplying a second coating solution to the second side of said web while said first coated side of said travelling web is supported with said pressurized gas, and while said web is still in a non-dry state,

the improvement wherein:

said step of supplying a second coating solution comprises:

supporting a rotatable bar for rotation about its axis at right angles to the direction of web movement and being peripherally grooved in the direction of bar rotation, for rotating contact with said web on said second side,

forming a liquid pool of said second coating solution upstream of said moving web and between said rotating bar and a portion of said web supported by said pressurized gas, and

rotating said peripherally grooved rotatable bar at a peripheral speed in excess of the velocity of web movement in the same direction as the travelling direction of said web, to pick up a sufficient amount of said coating liquid to cause said second coating solution to flow onto said second side of said travelling web, over the grooved periphery of said rotating bar to insure evenness and the absence of longitudinal streaks of said second coating on said second side of said travelling web.

4,241,112
METHOD FOR APPLYING POLYMER COATING COMPOSITION

Leonid A. Kostandov, Vorobievskoe shosse, 6, kv. 4; Nikolai S. Enikolopov, Kutuzovsky prospekt 26, kv. 245; Fridrikh S. Dyachkovsky, Vorobievskoe shosse, 2-b, kv. 9; Ljudmila A. Novokshonova, ulitsa 26 Bakinskikh Komissarov, 7, korpus 4, kv. 38; Jury A. Gavrilov, Chistoprudny bulvar, 14, kv. 57, all of Moscow; Olga I. Kudinova, poselok Kratovo, ulitsa Malakhovskaya, 15, Moskovskaya oblast; Tatyana A. Maklakova, Leningradskoe shosse, 8/2, kv. 200, Moscow; Leonid A. Akopian, Mytischi, ulitsa Tereshkovoi, 11, kv. 21, and Khaim-Mordkhe A. Brikenshtein, Noginsky raion, Chernogolovka, ulitsa Vtoraya, 5, kv. 2, both of Moskovskaya oblast, all of U.S.S.R.

Filed Aug. 8, 1978, Ser. No. 931,921
Int. Cl.² B05D 7/24
U.S. Cl. 427—213 10 Claims

1. A method for applying a polymer coating onto the surface of a solid filler comprising the steps of depositing a complex organometallic catalyst on the surface of the filler in two separate stages, the first stage comprising the step of depositing, in the gas phase, a compound of a transition metal on the surface of the filler whereby the transition metal compound becomes fixed to the surface of the filler and the second stage comprising the step of depositing, in the gas phase, an organic compound of a metal selected from the second or third groups of the periodic system on the resulting surface of the filler; and polymerizing an olefin in the gas phase at a temperature of from about 50° to 170° C. and a pressure of from about 1 to 60 atm on the catalyst deposited on the surface of the filler.

5. A method for applying a polymer coating onto the surface of a solid filler comprising the steps of depositing a complex organometallic catalyst on the surface of the filler in two separate stages, the first stage comprising the step of depositing, in the gas phase, a compound of a transition metal on the surface of the filler, whereby the transition metal compound becomes fixed to the surface of the filler and the second stage comprising the step of depositing, in the liquid phase, an organic compound of a metal selected from the second or third groups of the periodic system on the resulting surface of the filler; and polymerizing an olefin, in the liquid phase, at a temperature of from about 50° to 100° C. and a pressure of from about 1 to 60 atm on the catalyst deposited on the surface of the filler.

4,241,113

PROCESS FOR PRODUCING PROTECTIVE COATINGS ON METALS AND METAL ALLOYS FOR USE AT HIGH TEMPERATURES

Pier C. Martinengo, Turin, and Carlo Carughi, Cantalupa, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Continuation of Ser. No. 924,582, Jul. 14, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 73,036

Claims priority, application Italy, Jul. 14, 1977, 68635 A/77

Int. Cl.[3] C23C *9/00*

U.S. Cl. 427—229 **4 Claims**

1. A process for forming a protective metal diffusion coating on a metal or metal alloy workpiece, including the steps of:

preparing a first coating composition comprising a slurry of said protective matal in a carrier liquid, wherein said protective metal comprises aluminum and chromium in combination with yttrium, said chromium and said yttrium being present in an amount effective to improve the high temperature properties of said diffusion coating, said first coating composition comprising 77 wt % chromium, 4 wt % aluminum, 4 wt % yttrium hydride and 15 wt % of a cellulose acetate/acetone solution,

preparing a second coating composition comprising 80 wt % aluminum, 5 wt % ammonium chloride and 15 wt % of a cellulose acetate/acetone solution,

coating said workpiece with said first coating composition and then with said second coating composition, and

heating the coated workpiece in a non-oxidizing environment at 900° to 1100° C. for 1 to 5 hours to effect diffusion of said protective metal into the surface of said workpiece.

4,241,114

POLYIMIDES

John Gagliani, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 935,378, Aug. 21, 1978, which is a continuation of Ser. No. 877,516, Feb. 13, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,794

Int. Cl.[3] C08J *9/02*

U.S. Cl. 427—370 **8 Claims**

1. A process of making an artifact composed in part of a rigid, intumescent, polyimide foam which comprises the steps of: preparing a resinous precursor by forming a composition which is essentially a stoichiometric mixture of aromatic diamine and tetracarboxylic acid ester constituents and dispersing a filler composed of particulate solids in said composition; applying said precursor to a substrate; then heating said precursor to a temperature in the range of 210°–315° C. to produce a polyimide foam; and then heating said foam under a pressure in the range of 3–20 psig and at a temperature in the range of 230°–315° C. for a time sufficient to produce a permanent set in said foam.

4,241,115

RESIN COATED WOODEN ARTICLES PRODUCED BY CONTACTING A WOODEN ARTICLE WITH A RATHER QUICK CURING PHENOXY OR POLYAMIDE RESIN SYSTEM

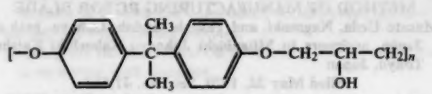
Samuel C. Temin, Needham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 5, 1978, Ser. No. 922,099

Int. Cl.[3] A63B *53/04, 59/06, 59/12*; B32B *21/08*

U.S. Cl. 427—384 **17 Claims**

1. A method of applying a protective phenoxy or polyamide resin coating to a wooden article consisting essentially of contacting said article for about 1 to 90 seconds with a coating solution consisting essentially of a prepolymerized phenoxy resin of the formula



wherein n = 150 to 700

and having a molecular weight between 45,000 to 200,000 or prepolymerized polyamide resin having a molecular weight of 5,000 to 10,000 or mixtures thereof dissolved in a readily vaporizable solvent, coating the article with the resin solvent solution, withdrawing the article from the resin solvent solution, drying said coated article in about 5 to 30 minutes by vaporizing the solvent from the resin coating on said article to obtain a 0.1 to 0.5 mm thick resin coating that is nonsticky to the touch.

11. A wooden article having an impact area protected with a 0.1 to 0.5 mm thick coating produced by the method of claim 1.

4,241,116

METHOD OF TREATING THE SURFACES OF SHAPED ARTICLES OF POLYCARBONATE RESINS

Susumu Taniyama, Toyonaka; Goro Shimaoka, Sakai, and Shoichi Inoue, Itami, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,802

Claims priority, application Japan, Sep. 19, 1978, 53/114857

Int. Cl.[3] B05D *3/02*

U.S. Cl. 427—386 **3 Claims**

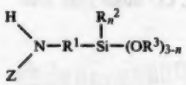
1. A method of treating the surface of a shaped article of a polycarbonate resin, which comprises

coating the shaped article of the polycarbonate resin with (I) a pre-treating solution containing a bisphenol type epoxy resin in a concentration of 5 to 50 wt% in a mixed solvent of a lower alcohol and an alkyl ether of ethylene glycol,

air-drying the coated article,

then coating the article with (II) a coating composition comprising

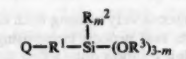
(A) a reaction mixture of the reaction of an aminoalkylalkoxy silane of the general formula



1

wherein R^1 represents a divalent hydrocarbon group containing 1 to 4 carbon atoms, R^2 and R^3 represent a monovalent hydrocarbon group containing 1 to 4 carbon atoms, Z represents a hydrogen atom or an aminoalkyl group, and n is 0 or 1,

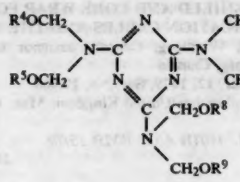
with an epoxyalkylalkoxy silane of the general formula



2

wherein R^1, R^2 and R^3 are as defined above, Q represents a glycidoxy group or an epoxycyclohexyl group, and m is 0 or 1,

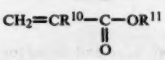
(B) a mixture of 10 to 0 wt% of an alkyl-modified methylol melamine of the general formula



wherein R^4, R^5, R^6, R^7, R^8 and R^9 represent a hydrogen atom or a monovalent hydrocarbon group with 1 to 4 carbon atoms,

and 90 to 100 wt% of an alkyd resin 4, and

(C) an acrylic acid derivative of the general formula



wherein R^{10} represents a hydrogen atom or a methyl group, and R^{11} represents a hydrogen atom, a hydrocarbon group containing 1 to 4 carbon atoms, a hydroxyalkyl group or a glycidyl group,

or its polymer of a low degree of polymerization, the content of the component (A) being 45 to 100 wt% and the content of the component (B) being 55 to 0 wt% in the mixture of the components (A) and (B), and the content of the component (C) in the composition of the components (A), (B) and (C) being 5 to 30 wt%,

and heat-curing the coated article.

4,241,117

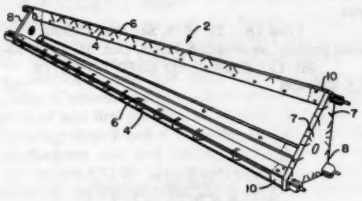
STRUCTURAL CORES AND THEIR FABRICATION

Irving E. Figge, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 14, 1979, Ser. No. 48,402

Int. Cl.³ E04C *3/30*; B65H *81/00*

U.S. Cl. 428—35 **15 Claims**



1. A jig for producing polyhedral structural cores from fiber filaments by winding the filaments thereon comprising three or more channel members, each with two flanges, end truss members securing one channel member to another with flanges of the channel members directed outwardly forming an open structure which if closed would be a polyhedron having the outwardly directed channel members as polyhedral edges, with the number of channel members defining the number of sides of the polyhedron, a plurality of alternately sloping slots through one flange of each channel member, a plurality of slots through the other flange of each channel member, and a plurality of slots through the end truss members.

8. An article of manufacture fabricated by interweaving fibrous filaments over the jig of claim **1** to form a polyhedron each side of which is a noncurving unitary structural core of interwoven fibrous filaments, plastic coated to form a series of symmetrical tetrahedrons arranged in longitudinal rows, each row of tetrahedrons being in offset sequential relation relative to the tetrahedrons in an adjacent row, whereby two sides of all tetrahedrons are disposed in oppositely inclining, parallel planes and the remaining sides are disposed in parallel longitudinal planes, all planes intersecting along a line extending from an apex of the base of each tetrahedron to its apex.

13. A method of making a polyhedron whose sides are structural core members in the form of longitudinal rows of tetrahedrons which comprises interweaving fibrous filaments in a helical pattern from slot to slot over the jig of claim **1** whereby the filament rows mounted on top of each other are each offset from the preceding row to form planes that intersect to define the tetrahedrons, and coating said interwoven filament planes with a plastic to form the polyhedron.

4,241,118

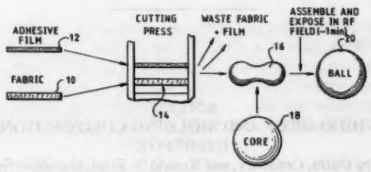
TENNIS BALLS AND METHOD OF MANUFACTURE

John Skelton, Sharon; Meredith M. Schoppee, Norfolk; Daniel K. Schiffer, Framingham, all of Mass., and Roy B. Parker, Monmouth, Me., assignors to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 914,256, Jun. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,254, Jul. 27, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,207

Int. Cl.³ A63B *37/12, 29/08*

U.S. Cl. 428—35 **13 Claims**



1. A method of adhering a textile tennis ball cover to a tennis ball core, which comprises;

providing a tennis ball core;

providing a textile tennis ball cover of a cut, dimension and configuration to cover said core;

providing a hot melt adhesive in a solid form;

assembling said cover on said core with said adhesive in association with said cover and in contact with the core;

applying radiation selected from radio-frequency and microwave radiations to the assembled core, cover and adhesive for a period of time to cause said adhesive to melt and form a bond between said core and said cover without substantial modification to the mechanical properties of the core and cover material; and

allowing said melt to solidify, whereby said cover is adhered to said core.

4,241,119

DIMENSIONALLY HEAT-UNSTABLE PRODUCTS

Normaan E. Smart, Welwyn Garden City, England, assignor to The Post Office, London, England

Filed Jan. 17, 1977, Ser. No. 759,753

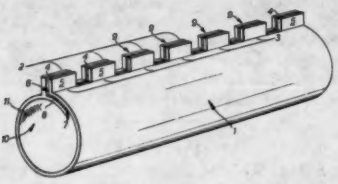
Claims priority, application United Kingdom, Jan. 22, 1976, 2573/76

Int. Cl.² B32B *1/08, 3/10*

U.S. Cl. 428—36 **6 Claims**

1. A cover formed from dimensionally heat unstable sheet material having first and second opposite edges with first and second edge portions adjacent said first and second edges respectively, said first edge portion carrying adjacent said first edge a first series of mutually spaced posts upstanding from the plane of the sheet at a first side thereof, said second edge portion carrying in spaced relation to said second edge a second series of mutually spaced posts upstanding from the plane of the sheet at said first side thereof thereby providing a sealing

flap engageable in underlapping relationship with said first edge portion when said first and second series of posts are juxtaposed to each other, said first and second series of posts being arranged to abut in face-to-face relation in non-interlocking relation to form mutually spaced pillars each made up of a



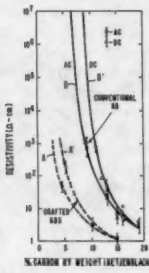
pair of posts respectively from said first and second series, and a separate ladder-form fixing means defining apertures to embrace said pillars to retain said means against longitudinal displacement relative to said pillars and to retain said first and second pairs of posts against longitudinal and transverse displacement relative to each other.

4,241,120

VIDEO DISCS AND MOLDING COMPOSITIONS THEREFOR

Pabitra Datta, Cranbury, and Ronald N. Friel, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,846
Int. Cl.[2] H04N *1/30*; B32B *3/02*
U.S. Cl. 428—65 **5 Claims**



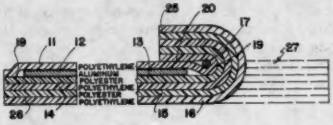
1. In a video information recording medium, adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of molded plastic material containing a sufficient amount of finely divided conductive particles so that the material has a bulk resistivity below about 500 ohm-cm at 900 MHz and having a layer of dielectric material at the disc surface and having an information track constituted by a surface relief pattern in said track whereby said signals are recovered upon establishment of said motion at said rate, the improvement which comprises employing as said conductive particles polymer grafted carbon particles wherein said graft polymer is a thermally polymerized polymer of a monomer having vinyl unsaturation.

4,241,121

COMBINED SHIELD AND CORE WRAP FOR TELECOMMUNICATION CABLES AND THE LIKE

Lawrence O'Connor, Winnipeg, Canada, assignor to Kable Tapes Ltd., Winnipeg, Canada

Filed Mar. 12, 1979, Ser. No. 19,468
Claims priority, application United Kingdom, Mar. 16, 1978, 10466/78
Int. Cl.[3] H01B *3/00*; B32B *15/08*
U.S. Cl. 428—77 **24 Claims**



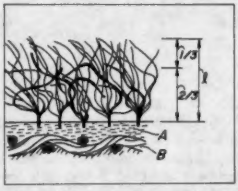
1. A combination core wrap and shield for use in the manufacture of telecommunication cables and the like which cables include a core and an outer extruded plastic cable jacket; comprising in combination a flexible elongated shield of metallic foil having a pair of longitudinal edges, at least one outer flexible plastic film bonded to one side of said shield and also having longitudinal edges, the longitudinal edges of said outer plastic film extending beyond the longitudinal edges of said shield, at least one inner flexible plastic film bonded to the other side of said shield and also having longitudinally extending edges, the longitudinal extending edges of said inner plastic film also extending beyond the longitudinal extending edges of said shield, the portions of said inner and outer plastic films extending beyond the longitudinally extending edges of said shield, being bonded together to envelope said shield thus forming a corrosion and moisture-proof enclosure for said shield.

4,241,122

ARTIFICIAL LEATHER HAVING CHINCHILLA-LIKE APPEARANCE AND NATURAL SUEDE-LIKE FEELING AND A METHOD FOR PRODUCING THE SAME

Koin Asano, Takatsuki, Japan, assignor to Kanebo, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,996
Claims priority, application Japan, Oct. 31, 1978, 53-135075
Int. Cl.[3] B32B *33/00*; B05D *1/14*, *1/16*
U.S. Cl. 428—90 **33 Claims**



1. An artificial leather having a suede-like texture and chinchilla-like appearance consisting of a substrate fabric and curved and entangled fibrillated piles stuck on the substrate fabric with an adhesive, said fibrillated piles consisting of polyamide and polyester having been obtained by fibrillating the piles composed of composite fibers which in transverse cross-section consist of at least three integral segments (A) of one polymer of the above described two polymers wherein said segments diverge from each other substantially radially in the outward direction and extend to the perimeter of the fiber and wedge-shaped segments (B) of another polymer which fill the spaces between the segments (A) or consist of the above

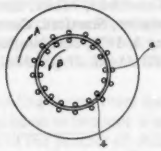
described segments (A), V-shaped segments (B') of the latter polymer and wedge-shaped segments (C) of the former polymer which fill the concavities of the V-shaped segments (B'), said V-shaped segments (B') and said wedge-shaped segments (C) filling the spaces between the segments (A), wherein all of the polymers extend to the perimeter of the fiber, so that the polymers are separated from each other to form very fine curved fibrils of (A) and (B) or (A), (B') and (C), which form fibrillated pile layer in which a content ratio by weight of polyamide fibrils in said pile layer increases from the surface of the pile layer toward the substrate fabric surface and the content ratio by weight of polyamide fibrils in total fibrils in an upper layer of $\frac{1}{2}$ of the total thickness of said pile layer from the surface of said layer is not more than 80% of a content ratio by weight of polyamide fibrils in the total fibrils in a lower layer of $\frac{1}{2}$ of the total thickness of said pile layer from the root portion of the fibrillated piles.

4,241,123

NON-WOVEN NETTING

Seng C. Shih, 60, Lane 63, Chung Cheng Rd., Luchow Hsiang, Taipei Hsien, Taiwan

Filed Nov. 14, 1978, Ser. No. 960,720
Int. Cl.³ B32B 5/12
U.S. Cl. 428—105 **6 Claims**



1. A method for making non-woven plastic netting comprising the steps of:

(1) extruding in a first direction in a first plane a first plurality of endless linear parallel spaced melted monofilaments;

(2) feeding a second plurality of spaced endless strands across said first plurality of monofilaments in said first direction in said first plane;

(3) during said feeding, reciprocally moving at least one of said first plurality of monofilaments and said second plurality of strands in a second direction nonparallel to said first direction in said first plane such that each of said plurality of strands overlaps at least two adjacent monofilaments of said first plurality of monofilaments; and

(4) following steps 2 and 3, directing said first plurality of monofilaments and said second plurality of strands together between a pair of pressure rollers so as to weld said strands and monofilaments together to form said netting.

4,241,124

INNER SHOE MATERIAL SUCH AS INSOLES AND MIDDLE SOLE MATERIAL IN THE FORM OF BREADTHS OR BLANKS THEREFROM

Paul Kremer, Grosskrotzenburg; Bernhard Gora, and Ludwig Klinger, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler, Hanau, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,727
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728774
Int. Cl.³ B32B 3/30, 25/16
U.S. Cl. 428—156 **14 Claims**

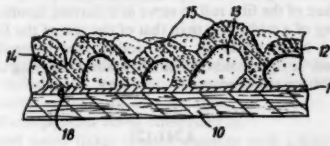
1. An inner sole or midsole inner shoe material in the form of breadths or blanks comprising a textile fiber structure which is impregnated with 50 to 400 parts by weight based on 100 parts by weight of the textile fibre structure of a mixture of synthetic materials comprising at least one styrene-butadiene copolymer and at least one polyvinyl alcohol obtained by substantial or complete hydrolysis of a polyvinyl ester in an amount of 8 to 100 parts by weight based on 100 parts by weight of the styrene-butadiene copolymer, said inner shoe material having high ability to absorb water and high ability to release the absorbed water.

4,241,125

FOAM PLASTICS SHEET MATERIALS

Rodger G. Canning, Chorley, and John P. Tomlinson, Darwen, both of England, assignors to Reed International Limited, England

Filed Jul. 10, 1979, Ser. No. 56,341
Int. Cl.³ B32B 3/00, 3/26
U.S. Cl. 428—158 **8 Claims**



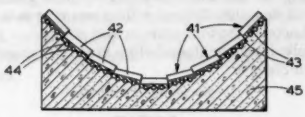
1. A foam plastics sheet material having a decorative relief finish, comprising a substrate web with a coating containing foam-defining voids characterized in that some at least of said coating is blistered with irregular macroscopic voids greater in size than the foam-defining voids between the coating and substrate and a sacrificed foam unites the coating and substrate web.

4,241,126

PROCESS FOR PRODUCING A COMPOSITE ELEMENT COMPRISING SHEET MEMBERS SECURED TO A SUPPORT AND SUCH COMPOSITE ELEMENTS

Maurice Nicolas, Maurepas, and Eugene Bacconnet, Marcoussis, both of France, assignors to Commissariat a l'Energie Atomique and BFG Glassgroup, both of Paris, France

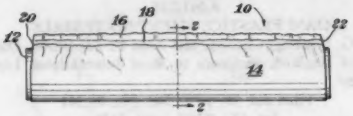
Filed Oct. 31, 1978, Ser. No. 956,043
Claims priority, application Luxembourg, Nov. 17, 1977, 78535
Int. Cl.² B32B 3/30, 5/16; B29C 5/00
U.S. Cl. 428—174 **16 Claims**



1. In a process for producing a composite element comprising a plurality of sheet members rigidly secured to a support with their rear main faces in contact therewith, wherein the sheet members, which have mirror-like reflectance, are placed on a jig and one or more fluid, settable substances are applied to the rear main faces of the thus arranged sheet members and are caused or allowed to set at least partially while the sheet members remain on the jig to form at least part of a substantially rigid support structure for the sheet members, the improvement comprising providing on the rear main faces of the sheet members one or more key members secured to the sheet members by an adhesive, said key members providing a key for the settable fluid.

4,241,127
STARTING TAIL FOR FILM ROLLS

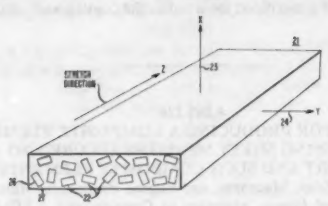
Lloyd E. Lefevre, Bay City, and Mark A. Wegenka, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 849,137, Nov. 7, 1977, Pat. No. 4,169,122. This application Dec. 11, 1978, Ser. No. 968,140
Int. Cl.[2] B32B 3/02, 3/28
U.S. Cl. 428—177 2 Claims

1. A substantially oriented film wrapped upon a roll core, said film having a relatively unoriented tail end presented at the surface of the film roll to serve as a starting handle, said tail end being of a width less than that of the rest of the film structure and being puckered with undulations indentifiable by touch and/or sight, said tail end not readily adhering to the rest of the film on the core.

4,241,128
PRODUCTION OF PIEZOELECTRIC PVDF FILMS

Tsuey T. Wang, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1979, Ser. No. 22,187
Int. Cl.[3] B29C 25/00; H01L 41/22
U.S. Cl. 428—212 9 Claims



1. A method of making a polyvinylidene fluoride film by steps comprising uniaxially stretching a polyvinylidene fluoride film having a predominantly α-type crystal structure to form a polyvinylidene fluoride film having a predominantly β-type crystal structure, and poling the film in an electric field, the invention characterized by the further steps comprising passing the stretched film one or more times along the stretch direction through rolling means so as to reduce the thickness of the film prior to said poling.

9. A polyvinylidene fluoride film produced according to the method of claim 1.

4,241,129
DELAMINATION RESISTANT MULTILAYER METAL/POLYMER COMPOSITES

Henry J. Marton, and Virgil B. Kurfman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1978, Ser. No. 970,098
Int. Cl.[3] B32B 15/06, 15/08, 27/40, 27/28
U.S. Cl. 428—216 11 Claims

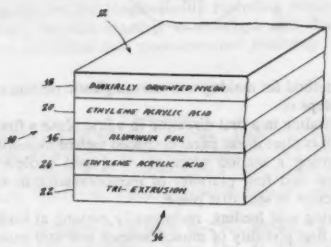
1. A metal/organic polymer composite comprising (1) a normally solid thermoplastic, substrate polymer layer; (2) a normally solid, metal layer having two major surfaces wherein the first of said surfaces is adhered to one surface of the substrate polymer layer, said metal layer having a thickness sufficient to form a substantially continuous layer and less than that which inherently delaminates from the substrate polymer layer; and (3) a layer of a soft adhesive polymer adhered to the second surface of the metal layer, said soft adhesive polymer

having toughness and modulus such that upon adhering the composite to a rigid substrate the tendency of the metal layer to separate from the substrate polymer layer is measurably reduced.

4,241,130
ABRASION AND CRACK RESISTANT PACKAGE LAMINATE

Donald E. Barnes, Minnetonka, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 1, 1978, Ser. No. 901,438
Int. Cl.[3] B32B 15/08, 27/08, 27/32, 27/34
U.S. Cl. 428—216 10 Claims



1. A package laminate consisting essentially of
a metallic foil;
an intermediate bonding layer bonded to each opposite side of the metal foil;
a flexure crack resistant biaxially oriented nylon film having a predetermined directional tear characteristic bonded to the metallic foil through one of said intermediate bonding layers; and
a smooth surfaced abrasion resistant, moisture impermeable triextrusion product bonded to the metallic foil through the other of said intermediate bonding layer wherein said triextrusion product comprises three copolymer polypropylene layers.

5. A package laminate consisting essentially of a metallic foil;
an ethylene acrylic acid bonding layer bonded to each opposite side of the metal foil;
a flexure crack resistant biaxially oriented nylon film having a predetermined directional tear characteristic bonded to the metallic foil through one of said ethylene acrylic acid bonding layers; and,
a smooth surfaced, abrasion resistant, moisture impermeable triextrusion product bonded to the metallic foil through the other of said ethylene acrylic acid bonding layer wherein said triextrusion product comprises three copolymer polypropylene layers.

4,241,131

MOLDABLE POLYURETHANE FOAM-BACKED FABRICS

Robert J. Bailey, Coraopolis, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 24, 1978, Ser. No. 909,156
Int. Cl.[3] B29D *27/04*
U.S. Cl. 428—262 13 Claims

1. A process for preparing a molded, polyurethane foam-backed fabric comprising the steps of:

(A) applying a foamable mixture or froth of polyurethane reaction components to the back of a fabric, said reaction components consisting essentially of:

(1) a polyisocyanate;

(2) an organic compound containing at least two hydrogen atoms capable of reacting with isocyanate groups, having a molecular weight of between 400 and 16,000 and containing essentially no ethylenically unsaturated groups;

(3) hydroxyl containing esters of acrylic and alkyl acrylic acids;

(4) a free radical initiator;

(5) a heat activated catalyst for the reaction between components (1) and (2);

(6) a blowing agent, or inert gas for frothing;

(7) a surface active agent for foam stability;

(B) heating the coated fabric for from 15 seconds to 10 minutes at a temperature of from about 80° to about 250° F. to allow the polyurethane reaction to proceed to produce a fully foamed, gelled, tack-free polyurethane foam; and

(C) thereafter molding the resultant foam-backed fabric by a hot-molding process to produce a complex shape.

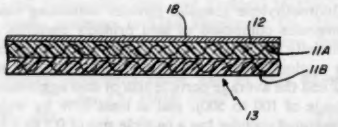
12. The product of the process of claim 1.

4,241,132

INSULATING BOARDS

Ralph C. Pratt, Maynard; Robert Davis, Concord, and Charles P. Howland, E. Pembroke, all of Mass., assignors to Castall Incorporated, East Weymouth, Mass.

Filed Aug. 17, 1978, Ser. No. 934,691
Int. Cl.[3] B32B *15/00*
U.S. Cl. 428—285 14 Claims



1. An insulating board, said board having a reinforcement polymeric layer of fibrous material with a predetermined dielectric constant and loss tangent suitable for use as a printed circuit base board with said dielectric constant being within the range of from 2.2 to 20,

a polybutadiene thermoset polymer impregnated into said reinforcement layer and having a dielectric constant which is closely matched to the dielectric constant of said layer,

said insulating board having a dielectric constant which is isotropic and a loss tangent which is isotropic,

said polymeric fibrous material being a polyolefin material,

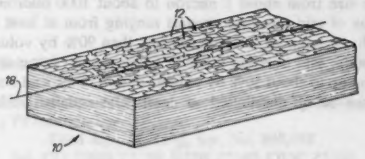
said dielectric constant of said polybutadiene polymer and said reinforcement layer each being below 3 at 60 cycles and 23° C.

4,241,133

STRUCTURAL MEMBERS OF COMPOSITE WOOD MATERIAL AND PROCESS FOR MAKING SAME

Anders E. Lund, Houghton; Gordon P. Krueger, Hancock; Darrell D. Nicholas, and Roy D. Adams, both of Houghton, all of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Apr. 2, 1979, Ser. No. 26,095
Int. Cl.[3] B32B *9/04*
U.S. Cl. 428—326 17 Claims



16. An elongated structural member of a composite wood material including at least two elongated structural components bonded together in angular relationship, each of said structural components being comprised of:

elongated wood flakes bonded together with a binder, said wood flakes having a grain direction extending generally parallel to the longitudinal axis thereof, an average length of about 0.5 inch to about 3.5 inches, and average length to average width ratio of about 4:1 to about 10:1 and an average thickness of about 0.01 to about 0.05 inch and at least a majority being oriented such that the longitudinal axis is generally parallel to the longitudinal axis of said structural component.

4,241,134

ELECTROSTATICALLY IMAGEABLE DRAFTING FILM

Herman Burwasser, Boonton, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 902,913, May 5, 1978, abandoned. This application May 24, 1979, Ser. No. 42,146
Int. Cl.[3] B32B *5/16, 19/02*
U.S. Cl. 428—331 2 Claims

1. An actinically transparent electrostatically imageable drafting film consisting essentially of a nonconductive plastic film support, an electrically conductive layer coated on one side of said support and, coated on said conductive layer, a markable dielectric layer comprising a dielectric binder resin and a particulate silica toothing material uniformly dispersed therein, said dielectric binder resin being selected from the group consisting of styrenated acrylics and cellulosic film formers, said toothing material having an average particle size from 2–6 microns and being dispersed in the binder in a weight ratio of about 1:1 , said dielectric layer being from 1.4 to 10 microns thick.

4,241,135

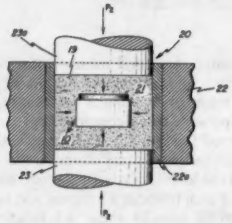
POLYCRYSTALLINE DIAMOND BODY/SILICON CARBIDE SUBSTRATE COMPOSITE

Minyoung Lee, Schenectady; Lawrence E. Szala, Scotia, and Robert C. DeVries, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 844,447, Oct. 21, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 10,748
Int. Cl.[3] B32B *3/26, 5/16*
U.S. Cl. 428—332 10 Claims

1. A composite consisting essentially of a polycrystalline diamond body integrally bonded to a substrate of polycrystalline silicon carbide, said polycrystalline diamond body consisting essentially of a mass of diamond crystals adherently bonded together by a bonding medium consisting essentially of silicon

carbide and a carbide and/or silicide of a metal component which forms a silicide with silicon and which forms a eutectiferous alloy with silicon, said metal component of said metal silicide being selected from the group consisting of cobalt, chromium, iron, hafnium, manganese, molybdenum, nickel, palladium, platinum, rhenium, rhodium, ruthenium, tantalum, thorium, titanium, uranium, vanadium, tungsten, yttrium, zirconium, and alloys thereof, said metal component of said metal carbide being selected from the group consisting of chromium, hafnium, titanium, zirconium, tantalum, vanadium, tungsten, molybdenum, and alloys thereof, said diamond crystals ranging in size from about 1 micron to about 1000 microns, the volume of said diamond crystals ranging from at least about 70% by volume up to about but less than 90% by volume of said body, said bonding medium being present in an amount ranging up to about 30% by volume of said body, said bonding medium being distributed at least substantially uniformly



throughout said body, the portion of said bonding medium in contact with the surfaces of said diamond crystals being at least in a major amount silicon carbide, said diamond body being at least substantially porefree, said substrate consisting essentially of a hot-pressed or sintered polycrystalline silicon carbide body wherein the silicon carbide grains are bonded directly to each other ranging in density from about 85% to about 100% of the theoretical density of silicon carbide and containing silicon carbide in an amount of at least 90% by weight of said substrate and being free of constituents which have a significant deleteriouseffect on the mechanical properties of said composite, said polycrystalline diamond body forming an interface with said silicon carbide substrate wherein said bonding medium extends from said polycrystalline diamond body into contact with said silicon carbide substrate at least substantially filling any pores throughout said interface so that said interface is at least substantially pore-free.

4,241,136

GLASS FIBER SIZE COMPOSITION AND PROCESS

Ernst Dereser, Goe, Belgium, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 5, 1979, Ser. No. 16,270

Int. Cl.³ C03C *25/02*; B05D *1/36*

U.S. Cl. 428—378 **22 Claims**

10. A process for treating glass fibers for use as reinforcement for cementitious materials comprising the steps of coating glass fibers with a cationic size composition containing a cationic film-forming organic polymer and then coating the resulting glass fibers with an anionic size composition containing an anionic film-forming organic polymer whereby the cationic and anionic polymer react each with the other to form a thin film on the glass fiber surfaces.

4,241,137

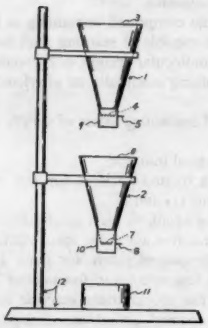
PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE GRANULAR POWDER

Masanori Izumo, Neyagawa; Syunichi Nomura, Kyoto, and Singo Tanigawa, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 568,824, Apr. 17, 1975, abandoned, which is a continuation of Ser. No. 382,218, Jul. 24, 1973, abandoned. This application Nov. 22, 1977, Ser. No. 854,003

Int. Cl.³ B32B *5/16*; C08F *6/00*; C09C *1/56*

U.S. Cl. 428—402 **11 Claims**



1. A process for preparing a polytetrafluoroethylene granular powder which comprises agitating a finely divided polytetrafluoroethylene powder composed of primary particles having an average particle size of 1 to 200μ in an aqueous medium consisting of water and an organic liquid having a surface tension of at most 35 dynes/cm. at 25° C., said organic liquid being incompatible with water in an apparatus to form agglomerates, by passing said agglomerates through a crushing mechanism and continuously recycling said crushed agglomerates through said apparatus and mechanism for further agitation and crushing, said crushing mechanism being capable of lowering an average particle size of the agglomerates composed of said primary particles having an average particle size of 1 to 200μ by partially crushing large agglomerated particles, said organic liquid being employed in an amount of 20 to 300% by weight and water being employed in an amount of at least 130% by weight and said aqueous medium being employed in an amount of 150 to 5000% by weight, respectively, relative to said finely divided polytetrafluoroethylene, to give said polytetrafluoroethylene granular powder consisting essentially of agglomerates composed of said primary particles and being substantially spherical, in which at least 90% by weight of the entire agglomerated powder has a particle size of at most 1000μ and the average particle size of said agglomerate falls in the range of 100 to 500μ and at least 60% by weight of the agglomerated powder has a particle size of 0.7 to 1.3 times said average particle size of said agglomerated powder, the powder flowability of said powder being at least 3 and the bulk density being at least 700 g./liter, and said agglomerated powder giving a molded article having a surface roughness of at most 2.0.

11. Polytetrafluoroethylene granular powder made by the process which comprises agitating a finely divided polytetrafluoroethylene powder composed of primary particles having an average particle size of 1 to 200μ to agitation in an aqueous medium consisting of water and an organic liquid having a surface tension of at most 35 dynes/cm. at 25° C., said organic liquid being incompatible with water in an apparatus to form agglomerates, by passing said agglomerates through a crushing mechanism and continuously recycling said crushed agglomerates through said apparatus and mechanism for further agitation and crushing, said crushing mechanism being capable of lowering an average particle size of the agglomerates com-

posed of said primary particles having an average particle size of 1 to 200μ by partially crushing large agglomerated particles having an improperly large particle size or abnormally large aggregates, said organic liquid being employed in an amount of 20 to 300% by weight and water being employed in an amount of at least 130% by weight and said aqueous medium being employed in an amount of 150 to 5000% by weight, respectively, relative to said finely divided polytetrafluoroethylene, to give said polytetrafluoroethylene granular powder consisting essentially of agglomerates composed of said primary particles and being substantially spherical, in which at least 90% by weight of the entire agglomerated powder has a particle size of at most 1000μ and an average particle size of said agglomerate powder falls in the range of 100 to 500μ and at least 60% by weight of the agglomerated powder has a particle size of 0.7 to 1.3 times said average particle size of said agglomerated powder, the powder flowability of said powder being at least 3 and the bulk density being at least 700 g./liter, and said granular powder giving a molded article having a surface roughness of at most 2.0.

4,241,138

POROUS HEAT-INSULATION MATERIAL

Minas G. Chentemirov, ulitsa Vorovskogo, 29/31, kv. 14; Ekaterina P. Lukienko, ulitsa Molodogvardeiskaya, 6, kv. 95; Levon O. Parsamian, Volgogradsky prospekt, 127, korpus 2, kv. 29; Anatoly F. Poluyanov, ulitsa Vavilova, 86, kv. 117; Jury G. Gorbachev, ulitsa Oktyabrskaya, 4, kv. 4; Nikolai S. Enikolopov, Kutuzovsky prospekt, 26, kv. 245; Fridrikh S. Dyachkovsky, Vorobievskoe shosse, 2-b, kv. 9; Ljudmila A. Novokshonova, ulitsa 26 Bakinskikh komissarov, 7, korpus 4, kv. 38; Jury A. Gavrilov, Chistoprudny bulvar, 14, kv. 57, all of Moscow; Olga I. Kudinova, ulitsa Malakhovskaya, 15, poselok Kratovo Moskovskoi oblasti, and Tatyana A. Maklakova, Leningradskoe shosse, 8/2, kv. 200, Moscow, all of U.S.S.R.

Filed Oct. 30, 1978, Ser. No. 955,571

Int. Cl.[2] B32B *19/04, 27/06, 27/14;* **C04B** *43/00*

U.S. Cl. 428—403 **3 Claims**

1. A porous heat-insulation material comprising blocks molded from granules of a porous mineral filler with a polyolefin coating, the coating having a thickness of from about 1/1000 to 1/25 of an average granule diameter; said granules being spaced apart from each other a distance of from about 0.5 to 2.0 times the coating thickness; and the mass ratio of said porous mineral filler to said polyolefin being from about 80–98:20–2, respectively.

4,241,139

MAGNETIC RECORDING MEDIUM

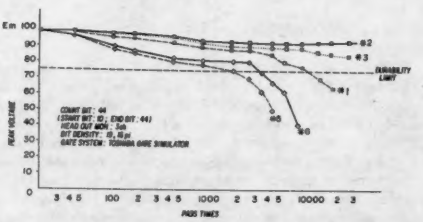
Yuichi Kubota; Tsunayoshi Saito, and Yoshiaki Makino, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd. and Tokyo Magnetic Printing Co., Ltd., both of Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,304

Claims priority, application Japan, Apr. 19, 1978, 53/46053

Int. Cl.[2] H01F *10/02*

U.S. Cl. 428—413 **5 Claims**



1. A magnetic recording medium which comprises a protective layer coated on a magnetic recording layer which is coated on a substrate and said protective layer comprises polyurethane and nitrocellulose in which isopropyl alcohol originally present in the nitrocellulose has been replaced by a resin selected from the group consisting of polyurethane resins, polybutadiene resins, butadiene-acrylonitrile copolymers, vinyl chloride-vinyl acetate-vinyl alcohol copolymers, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers, vinylidene chloride-acrylonitrile copolymers, vinyl acetate resins, epoxy resins, phenoxy resins, polyvinylbutyral resins, polyvinyl formal resins and polyester resins.

4,241,140

LAMINATED SAFETY GLASS WITH POLYURETHANE FILM

Vernon G. Ammons, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 12, 1978, Ser. No. 895,693

Int. Cl.[3] B30B *17/10;* **B32B** *27/40;* **C03C** *27/00*

U.S. Cl. 428—339 **7 Claims**

1. A method for making a laminated glass article comprising the steps of:

a. casting into a sheet mold a single curable polyurethane reaction mixture which comprises:

(1) a polytetramethylene ether glycol having a molecular weight from about 400 to about 2000,

(2) a polycaprolactone triol having a molecular weight from about 300 to 1000;

(3) a monomeric aliphatic diol having from 4 to 6 carbon atoms; and

(4) an isomeric mixture of 2,4-toluene diisocyanate and 2,6-toluene diisocyanate;

b. polymerizing the reaction mixture to form a self-supporting polyurethane sheet;

c. removing the self-supporting polyurethane sheet from said mold;

d. laminating said polyurethane sheet to a sheet of glass; and

e. curing the polyurethane.

3. The method according to claim 1, wherein the step of laminating the self-supporting polyurethane sheet to a sheet of glass is performed prior to curing the polyurethane.

4,241,141

REMOVABLE COATINGS WHICH PREVENT PENETRATION FROM FELT TIP MARKING INKS

Douglas W. Dill, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 19, 1979, Ser. No. 21,748

Int. Cl.[3] B32B *27/00*

U.S. Cl. 428—500 **11 Claims**

1. A method of protecting surfaces from being permanently marked by graffiti comprising:

(a) Coating the surface to be protected with a removable barrier composition consisting essentially of;

(i) from 10 to 35% by weight of a polymer having a monomer content of from 25 to 70% by weight hard monomer, from 15 to 50% by weight of a soft monomer and from 15 to 30% by weight of an acid monomer, the polymer having been solublized with sodium hydroxide, potassium hydroxide or mixtures thereof;

(ii) from 0 to 15% of a plasticizer selected from the group consisting of the sodium salt of a maleic anlydride adduct with a mixed alpha olefin having chain lengths of more than 30 carbon atoms, the potassium salt of a maleic anlydride adduct with a mixed alpha olefin having chain lengths of more than 30 carbon atoms and mixtures thereof;

(iii) from 0 to 2% of a coalescing solvent selected from the group consisting of diethylene glycol monoethyl ether,

diethylene glycol monobutyl ether and mixtures thereof;

(iv) from 0 to 3% of defoamers, leveling agents and mixtures thereof; and

(v) from 90 to 45% by weight water, the composition having an MFT of less than 30° C. and a pH of from 7.0 to 10.0; and

(b) Allowing the coating to dry on the surface to be protected.

4,241,142
CLAY PIGMENT FOR COATING PAPER

Adam F. Kaliski, Hightstown; Richard R. Berube, Cliffwood, and John C. Nease, Califon, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation of Ser. No. 931,544, Aug. 7, 1978, which is a continuation of Ser. No. 832,727, Sep. 12, 1977, abandoned, which is a division of Ser. No. 587,606, Jun. 17, 1975, abandoned. This application Dec. 20, 1978, Ser. No. 971,365

Int. Cl.³ B05D *3/02, 3/12;* **B32B** *23/08, 27/10*

U.S. Cl. 428—511 **15 Claims**

3. A low gloss coated printing paper having improved optical and printing properties, said printing paper comprising paper and a smooth coating thereon of adhesive-bound clay particles, said clay particles comprising (a) from 5 to 30 parts by weight of mechanically delaminated particles of kaolin clay, the particles of which range in size from 2 μm to 10 μm and are predominantly in the size range of 2 μm to 5 μm and (b) from 95 to 70 parts by weight of a coarse particle-size fraction of kaolin clay which has not undergone mechanical delamination, said course-size fraction being essentially free from particles coarser than 10 μm and containing from about 88% to 94% by weight of particles finer than 5 μm and from about 40% to 60% finer than 2 μm.

13. The printing paper of claim 3 wherein said aqueous paper coating adhesive is selected from known adhesives which minimize ink set-off in the coated printing paper.

14. The printing paper of claim 13 wherein said adhesive is selected from the group consisting of polyvinyl acetate latexes, styrene-butadiene latexes and mixtures thereof with starch or protein.

4,241,143
PROCESS FOR PRODUCING HIGHLY GLOSSY COATED PAPER

Yutaka Ashie, and Yasuhiro Nakamura, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,953

Claims priority, application Japan, Mar. 17, 1978, 53-30830

Int. Cl.³ B05D *3/02, 3/12;* **B32B** *23/08, 27/10*

U.S. Cl. 428—512 **14 Claims**

1. A process for producing a high gloss coated paper comprising applying to paper an aqueous coating color containing 5 to 40 parts by weight of satin white per 100 parts by weight of total pigments and 5 to 40 parts by weight of a polymer latex having a Tg more than 45° C. per 100 parts by weight of total pigments, drying and subjecting the dried, coated substrate to specular finishing at a temperature higher than Tg of the polymer latex.

9. A high gloss coated paper produced by the process according to claim 1.

4,241,144
ANTISTATIC POLYOLEFIN FILMS

Brian N. Hendy, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

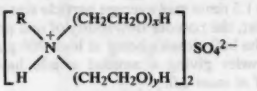
Continuation of Ser. No. 762,166, Jan. 24, 1977, now Defensive Publication No. T961,009. This application Mar. 30, 1979, Ser. No. 25,600

Claims priority, application United Kingdom, Feb. 6, 1976, 4769/76; Apr. 9, 1976, 14547/76

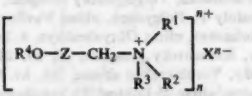
Int. Cl.³ B32B *27/32, 27/08*

U.S. Cl. 428—516 **3 Claims**

1. An antistatic polyolefin film having on at least one surface thereof (1) an amine sulphate of the formula



wherein x is a positive integer, y is a positive integer, the sum of x and y is from 2 to 5, and R is a univalent aliphatic radical containing from 8 to 22 carbon atoms and in addition thereto (2) a compound of the formula



wherein each of R^1, R^2, and R^3 which be the same or different, is a hydrogen atom or a lower alkyl radical containing from 1 to 6 carbon atoms, or R^1 and R^2 are each methylene groupings within a common five- or six-membered saturated heterocyclic ring, Z is a methylene group when R^4 is a hydrogen atom or an acyl radical containing up to 15 carbon atoms, or Z is a carbonyl group when R^4 is a hydrogen atom, and X is an anion of valency n.

4,241,145
NOVEL INTUMESCENT COMPOSITION

Jayendra R. Shukla, Ann Arbor, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

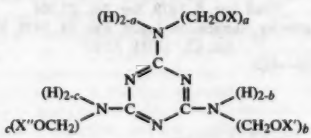
Filed Sep. 17, 1979, Ser. No. 76,060

Int. Cl.³ C08L *85/02*

U.S. Cl. 428—537 **25 Claims**

1. An intumescent composition containing a cyclic nitrogen compound, a copolycondensed vinylphosphonate, an acid, and water wherein:

(a) said cyclic nitrogen compound is

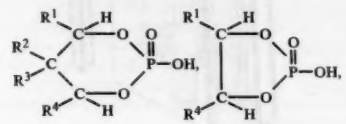


wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and —CH_3;

(b) said copolycondensed vinylphosphonate consists essentially of the product resulting from the reaction, in stoichiometric ratio of from about 1:10 to 10:1, between a bis(2-haloalkyl) vinylphosphonate and at least one pentavalent phosphorus ester of the structure ROP(=O)XY where R is selected from the class consisting of C_1–C_{20} alkyl and C_1–C_{20} chloro- or bromoalkyl groups and X and Y are groups selected from the class consisting of RO—,

C_1–C_{20} alkyl, C_2–C_{20} alkenyl, phenyl, phenoxy, amino, C_1C_{20} alkyl substituted amino, phenyl substituted amino, C_2–C_{20} alkylene bonded to the same or to another ROP(=O) moiety and C_2–C_{20} alkyleneoxy and C_2–C_{20} alkylenedioxy bonded to the same or to another ROP(=O) moiety, wherein said rection is carried out at an elevated temperature for a period of time which is sufficient to evolve R-halide as a by-product and to form a P(O)-O-alkylene-O-P(O) linkage, with the proviso that said product is not the homopolycondensed product of said bis(2-haloalkyl) vinylphosphonate; and

(c) said acid is selected from the group consisting of phosphorous acid, phosphoric acid,



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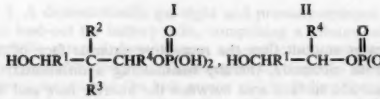
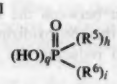


II

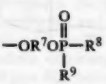
III



IV

V

and mixtures thereof, wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, R^3, and R^4 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and q plus h plus i equals 3; and wherein R^5 and R^6 are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



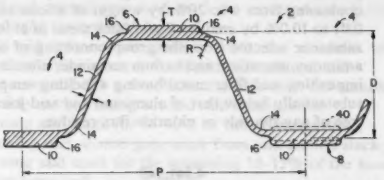
wherein R^7 is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^8 and R^9 are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing about 2 to about 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^5 and R^6 groups does not exceed about 8.

4,241,146

CORRUGATED PLATE HAVING VARIABLE MATERIAL THICKNESS AND METHOD FOR MAKING SAME

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001, and Firoze H. Broacha, Lakewood, Colo., assignors to Eugene W. Sivachenko, Redding, Calif.

Filed Nov. 20, 1978, Ser. No. 962,365
Int. Cl.³ B32B *3/28, 15/00*
U.S. Cl. 428—600 **21 Claims**



16. A corrugated metal plate made from sheet material comprising: a plurality of side by side parallel corrugations having a generally trapezoidal cross-section and defining longitudinally extending, parallel, alternating corrugation peaks and corrugation troughs interconnected by sloping corrugation sides, the peaks and the troughs each including a substantially flat crown section extending over the full length of the plate and, in a direction transversely thereto, between adjoining corrugation sides, the corrugated plate further including curved corrugation segments extending between lateral edges of the crown sections and the flat corrugation sides, the crown sections having a material thickness substantially greater than a material thickness of the corrugation sides, the crown sections, the corrugation sides, and the corrugation segments being integrally formed from the same sheet.

4,241,147

DIFFUSION ALUMINIZED AGE-HARDENABLE STAINLESS STEEL

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 851,504, Nov. 14, 1977, and Ser. No. 809,189, Jun. 23, 1977, and Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, and Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, said Ser. No. 851,504, said Ser. No. 809,189, said Ser. No. 752,855, each is a continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, said Ser. No. 614,834, is a continuation-in-part of Ser. No. 446,473, Feb. 27, 1974, Pat. No. 3,958,046. This application Oct. 23, 1978, Ser. No. 953,762
Int. Cl.² B32B *15/00*
U.S. Cl. 428—652 **5 Claims**

1. A gas turbine airfoil having an aluminized case diffused into a nickel- or cobalt-plated surface of an age-hardenable stainless steel substrate, in which the plating is not over about 0.1 mil thick and the aluminized case is at least about 0.2 mil thick, the surface of the case having a roughness than 38 microinches.

4,241,148

COMPOSITE ALUMINUM-CONTAINING WORKPIECES

Heinz Schoer, Alfter, and Werner Schultze, Bonn, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Division of Ser. No. 729,039, Oct. 4, 1976, Pat. No. 4,121,750, which is a continuation of Ser. No. 368,627, Jun. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 98,173, Dec. 14, 1970, abandoned. This application Nov. 21, 1977, Ser. No. 853,768

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1969, 1962760; Jun. 11, 1970, 2028683

Int. Cl.³ B32B *15/20*

U.S. Cl. 428—654 **8 Claims**

1. A bonded article comprising a pair of spaced apart workpieces consisting of aluminum and bearing an aluminum oxide surface layer,

an aluminum silicon filler metal interposed between said oxide surface layers to form a joint between said workpieces, said filler metal consisting essentially of aluminum containing from 6 to 20% by weight of silicon and from 0.01 to 10.0% by weight of said filler metal of at least one substance selected from the group consisting of bismuth, antimony, strontium and barium remainder aluminum and impurities, said filler metal having a melting temperature substantially below that of aluminum and said joint being free of any fluoride or chloride flux residue.

4,241,149

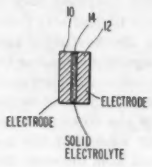
CANAL CLATHRATE COMPLEX SOLID ELECTROLYTE CELL

Mortimer M. Labes, Philadelphia, Pa.; Marvin E. Jones, Roseville, Minn., and Huey-Chuen I. Kao, Philadelphia, Pa., assignors to Temple University, Philadelphia, Pa.

Filed Jul. 20, 1979, Ser. No. 59,283

Int. Cl.³ H01M *6/18, 4/60*

U.S. Cl. 429—50 **11 Claims**



1. In an electrolytic cell having three elements, namely two electrodes and an electrolyte therebetween, the improvment wherein one of said elements is comprised of a canal clathrate complex of benzophenone or substituted benzophenone and a polyhalide salt of a cation from the group consisting of K^+, Na^+, Cs^+, Li^+, NH_4^+, Rb^+, and R_4N^+, where R is an alkyl group of less than five carbons.

4,241,150

METHOD FOR CONTROL OF EDGE EFFECTS OF OXIDANT ELECTRODE

Peter Carr, Utica, and Chen H. Chi, Sterling Heights, both of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

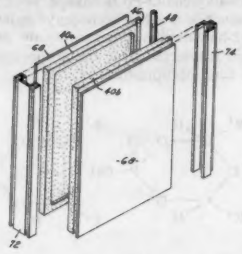
Filed Jul. 30, 1979, Ser. No. 62,109

Int. Cl.³ H01M *2/38*

U.S. Cl. 429—51 **9 Claims**

1. A method of discharging an electrical energy storage device comprising the steps;

1. providing a first electrode comprised on an electrochemically reducible substance;
2. providing a porous electrode having a first and second exterior face with a cavity formed in the interior between said exterior faces, thereby having first and second interior faces positioned opposite the first and second exterior faces;
3. providing a current carrying electrolyte between said electrodes;
4. passing an oxidant through said porous electrode;
5. screening the porous electrode thereby decreasing its electrochemical activity by blocking the interior face a



greater amount than the respective exterior face of the porous electrode, thereby maintaining a differential of electrode surface area between the interior face and the exterior face; and

6. closing the circuit between the first electrode and the porous electrode, thereby oxidizing the substance at the first electrode and reducing the oxidant at the porous electrode.

4,241,151

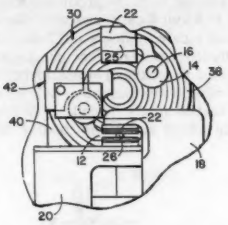
BATTERY STRAP WELDED CONNECTION

Toshio Uba, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed May 29, 1979, Ser. No. 43,203

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—94 **12 Claims**



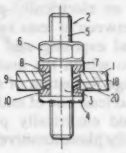
1. In an electrochemical cell comprising a cell pack consisting of opposite polarity electrode plates and separator material interleaved between the plates, a plurality of spaced collector tabs emanating from the plates and upstanding from an edge of the cell pack, and a strap having at least one projecting leg interposed between and welded to adjacent collector tabs associated with a given polarity plate, the improvement comprising:

said leg having an elongate body portion provided with at least one boss protruding from said cell pack edge and spaced from each end of the leg, at least a portion of the boss being fused together with said adjacent collector tabs to form, with the leg, a unitary welded connection of low silhouette and minimum mass.

4,241,152
DISCONNECTABLE GAS-TIGHT AND PRESSURE-RESISTANT ELECTRICAL LEAD-OUT

Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Deutsch Automobilgesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,328
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849326
Int. Cl.³ H01M 2/02
U.S. Cl. 429—181 19 Claims



1. A disassemblable gas-tight and pressure-resistant electrical lead-out for battery cells, comprising a substantially rigid metallic external sleeve means, a metallic bolt means effecting current conduction and insulating means disposed between the sleeve means and the bolt means and including three sleeve-shaped insulating members disposed axially one behind the other and substantially filling out the space between the bolt and sleeve means, the center insulating member being made of a practically gas-tight deformable material while the two outer insulating members are made from a substantially form-stable material, and at least one of the two outer insulating members being adapted to be axially tightened with respect to the center insulating member, characterized in that the two outer insulating members are provided on their sides facing the center member with a ring-shaped raised portion which during axial tightening penetrates in the center insulating member.

4,241,153
PROCESS FOR MAKING COLOR SEPARATION NEGATIVES AND POSITIVES FOR USE IN MULTI-COLOR PRINTING

Vjatsjeslev Rovnjev, Oslo, Norway, assignor to AB Bates a/s, Oslo, Norway

Filed Oct. 27, 1978, Ser. No. 955,726
Claims priority, application Norway, Oct. 28, 1977, 773692; Oct. 3, 1978, 783339
Int. Cl.² G03C 5/00; G03F 5/00
U.S. Cl. 430—4 27 Claims

1. A method of manufacturing intermediate and final color-separation negatives and positives from a color original suitable for use in screenless printing, comprising the steps of:

exposing a continuous-tone panchromatic (pan) film including a silver halide emulsion through a selected filter to light from said color original and developing said film to a density not exceeding 1.0, said developed pan film being termed an intermediate color-separation negative, said development of said pan film being effected under conditions such as to produce silver crystals larger in size than produced in normal development, said conditions including at least one of the steps, (A) raising the temperature of the developer from its normal temperature by up to about 10° C., (B) increasing the time of rinsing by a factor of up to about 6, and (C) increasing the drying temperature up to a maximum of about 40° C. with the objective of increasing the size of the silver crystals formed in said development of said film;

placing said intermediate color-separation negative in contact with an orthochromatic continuous-tone film and exposing and developing said orthochromatic film to prepare a first grey mask having a density range of 40–80% of the density range of said intermediate negative;

exposing, and subsequently developing, a first lithographic (lith) orthochromatic film in a stack arranged as follows, the components in said stack being listed in order from the light source:

(a) a first diffusion film having one matte surface and said matte surface facing toward said light source;

(b) said first grey mask with the emulsion layer thereof facing toward said light source;

(c) said intermediate color-separation negative with the emulsion layer thereof facing away from said light source; and

(d) said first lith film with the emulsion side thereof facing toward said light source, said exposed and developed first lith film being an intermediate positive;

preparing a second grey mask by exposing an orthochromatic continuous-tone film through said intermediate positive and developing same to a density range of 30–40% of that of said intermediate positive;

preparing a second stack, the components of said stack being listed in order from a light source;

(e) said second grey mask with the emulsion side thereof facing toward said light source;

(f) said intermediate positive with the emulsion side thereof facing away from said light source; and

(g) a second lith orthochromatic film with the emulsion side thereof facing toward said light source;

exposing said stack for 85–90% of the necessary time;

removing said second grey mask from said second stack;

exposing said stack for the remaining 10–15% of the necessary time; and

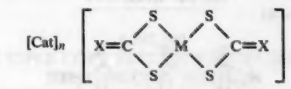
completing the developing of said second lith film to produce a final negative, the term "developing" being taken to include actual developing, fixing, rinsing and drying.

4,241,154
METHOD OF STABILIZING ORGANIC SUBSTRATES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka, and Yoshiaki Suzuki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 30, 1978, Ser. No. 956,303
Claims priority, application Japan, Oct. 28, 1977, 52-129349
Int. Cl.³ G03C 7/00
U.S. Cl. 430—17 12 Claims

8. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said photographic material against the action of light



where M represents a metal atom selected from the group consisting of Cu, Co, Ni, Pd and Pt atoms, Cat represents a divalent organic or inorganic cation, or two monovalent organic or inorganic cations, X represents a

group or a sulfur atom, R^1 and R^2 represent CN, COR^3, $COOR^4$, $CONR^5R^6$ or SO_2R^7; or R^1 and R^2 combine to form a non-metallic 5- or 6-membered ring, wherein R^3, R^4 and R^7 represent a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, or a substituted or unsubstituted aryl group having from 6 to 10 carbon atoms, R^5 and R^6 repre-

sents a hydrogen atom, a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, or a substituted or unsubstituted aryl group having from 6 to 10 carbon atoms and n is 1 when Cat is a divalent cation and 2 when Cat is a monovalent cation.

4,241,155

METHOD FOR STABILIZING ORGANIC SUBSTRATES INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, Minami-ashigara; Yoshiaki Suzuki, Minami-ashigara, and Shigeru Oono, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

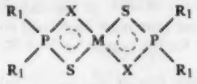
Filed Nov. 14, 1978, Ser. No. 960,545

Claims priority, application Japan, Nov. 15, 1977, 52-137027

Int. Cl.³ G03C 7/00

U.S. Cl. 430—17 **23 Claims**

12. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said color photographic dye image to light



(I)

wherein M represents an atom selected from the group consisting of Cu, Co, Ni, Pd and Pt, X represents O or S, R_1 represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group or, when taken together, the R_1's bound to the same phosphorus atom represents the non-metallic atoms necessary to complete a 6-membered ring together with the phosphorus atom.

4,241,156

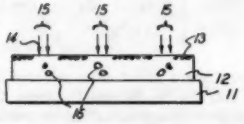
IMAGING SYSTEM OF DISCONTINUOUS LAYER OF MIGRATION MATERIAL

Werner E. L. Haas, Webster; James E. Adams, Bear Creek Harbor East, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 84,018, Oct. 26, 1970, Pat. No. 4,084,966, which is a continuation-in-part of Ser. No. 755,163, Aug. 26, 1968, abandoned. This application Oct. 26, 1977, Ser. No. 845,761

Int. Cl.² G03L 5/04

U.S. Cl. 430—41 **6 Claims**



1. An imaging method comprising

providing an imaging member comprising a stable substrate having a microscopically discontinuous layer of agglomerable migration imaging material on one surface of said substrate, and

imagewise exposing said member to an image pattern of electromagnetic radiation from an original image, said radiation being of sufficient energy to cause the imaging material in the imagewise exposed areas of said microscopically discontinuous layer to evaporate whereby the image density in the exposed areas is decreased thereby forming an image contrast with the unexposed areas.

4,241,157

ORGANIC HETEROCYCLIC ELECTROPHOTOSENSITIVE MATERIALS FOR MIGRATION IMAGING PROCESSES

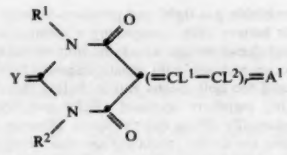
Frank G. Webster, Rochester, and Michael T. Regan, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 818,698, Jul. 25, 1977, Pat. No. 4,152,093. This application Aug. 21, 1978, Ser. No. 935,212

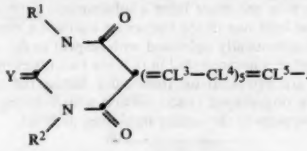
Int. Cl.³ G03G 13/00

U.S. Cl. 430—41 **8 Claims**

1. An electrophoretic migration imaging process which comprises subjecting an electrically photosensitive colorant material positioned between at least two electrodes to an applied electric field and exposing said materials to an image pattern of radiation to which the material is photosensitive, thereby obtaining image formation of said electrically photosensitive materials on at least one of said electrodes, wherein at least a portion of said electrically photosensitive colorant material is an electrically photosensitive material having one of the following structures:



I.



II.

r and s may be zero, one two or three;

R^1 and R^2 may be the same or different and each may represent hydrogen, alkyl, aryl, alkoxyalkyl or alkoxyaryl;

Y represents O or S;

L^1, L^2, L^3, L^4 and L^5, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl and in addition either L^1 and L^2 or any two of L^3, L^4 and L^5, together with the atoms to which they are attached, may represent the elements needed to complete a carbocyclic ring;

A^1 represents napthoquinolizine, acridine, quinazoline, or an N-substituted nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, dioxolobenzothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, triazolobenzothiazole, quinolizine or tetrazole;

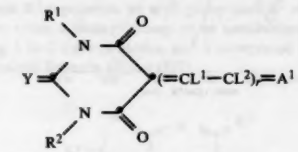
A^2 represents a heterocyclic nucleus as defined for A^1 and in addition represents aryl or a heterocyclic nucleus selected from the group consisting of benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, dihydro-4H-pyrrolo[3,2,1-ij]-quinoline; tetrahydro-4H-pyrrolo[3,2,1-ih]quinoline; 1H,5H-benzo[ij]quinolizine; dihydro 1H,5H-benzo[ij]quinolizine and tetrahydro-1H,5H-benzo[ij]quinolizine, dihydro-9H-benzo[a]-xanthen-8-yl; dihydro-5H-benzo[b]pyran-7-yl;

said N-substituents are selected from the group consisting of alkyl, aryl, haloaryl and dialkylamino;

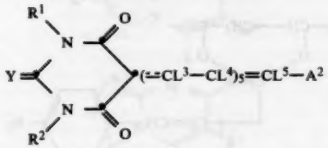
and A^1 and A^2 may be further substituted by one or more substituents selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, nitro,

oxo, haloaryl, dialkylamino, diarylamino or A^1 $(CH{=}CH)_r$.

5. An electrophoretic migration imaging dispersion comprising an electrically insulating carrier, a charge control agent and an electrically photosensitive material having one of the following structures



I.



II.

r and s may be zero, one, two or three;

R^1 and R^2 may be the same or different and each may represent hydrogen, alkyl, aryl, alkoxyalkyl or alkoxyaryl;

Y represents O or S;

L^1, L^2, L^3, L^4 and L^5, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl and in addition either L^1 and L^2 or any two of L^3, L^4 and L^5, together with the atoms to which they are attached, may represent the elements needed to complete a carbocyclic ring;

A^1 represents napthoquinolizine, acridine, quinazoline, or an N-substituted nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, dioxolobenzothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, triazolobenzothiazole, quinolizine or tetrazole;

A^2 represents a heterocyclic nucleus as defined for A^1 and in addition represents aryl or a heterocyclic nucleus selected from the group consisting of benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, dihydro-4H-pyrrolo[3,2,1-ij]-quinoline; tetrahydro-4H-pyrrolo[3,2,1-ih]quinoline; 1H,5H-benzo[ij]quinolizine; dihydro 1H,5H-benzo[ij]quinolizine and tetrahydro-1H,5H-benzo[ij]quinolizine, dihydro-9H-benzo[a]-xanthen-8-yl; dihydro-5H-benzo[b]pyran-7-yl;

said N-substituents are selected from the group consisting of alkyl, aryl, haloaryl and dialkylamino;

and A^1 and A^2 may be further substituted by one or more substituents selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, nitro, oxo, haloaryl, dialkylamino, diarylamino or A^1 $\{CH{-}CH\}_r$.

4,241,158

VACUUM DEPOSITED ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Tadaji Fukuda, Kawasaki, and Teruo Misumi, Toride, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

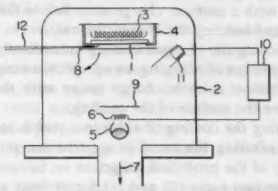
Filed Dec. 22, 1978, Ser. No. 972,280

Claims priority, application Japan, Dec. 28, 1977, 52-160622

Int. Cl.³ G03G 5/082

U.S. Cl. 430—86 **7 Claims**

1. In an electrophotographic photosensitive member having an inorganic amorphous vacuum deposition layer formed by deposition of a photoconductive material onto a substrate as the photoconductive layer, the improvement wherein said inorganic amorphous deposition layer is formed by gradually



raising the substrate temperature within a range above the glass transition point of the photoconductive material and below the crystallization transition point thereof during the deposition of the photoconductive material.

4,241,159

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER COMPRISING ACRYLIC OR METHACRYLIC ACID ESTER OF HYDROGENATED ABIETYL ALCOHOL POLYMER

Jan J. Priem, Mortsel; Noël J. De Volder, Edegem; Yvan K. Gilliams, Berchem, and Walter F. De Winter, 's-Gravenwezel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 552,804, Feb. 25, 1975, abandoned. This application Nov. 18, 1977, Ser. No. 852,977

Claims priority, application United Kingdom, Feb. 26, 1974, 8689/74

Int. Cl.² G03G 9/12

U.S. Cl. 430—114 **11 Claims**

1. An electrostatic liquid developer for the development of electrostatic charge patterns of the type comprising an electrically insulating carrier liquid having a dielectric constant of less than 3 and a volume resistivity in excess of 10^9 Ohm.cm, and suspended within said electrically insulating carrier liquid resin-precoated toner particles, said particles comprising coloring matter dispersed within and precoated by a said polymer, wherein said precoating polymer is a polymer of a monomeric acrylic or methacrylic acid ester of hydrogenated abietyl alcohol and is obtained by in situ polymerization accompanied by mechanical mixing in the presence of said coloring matter and a polymerization initiator, said precoating polymer being generally insoluble in said carrier liquid.

4,241,160

MULTIPLE COPY ELECTROPHOTOGRAPHIC REPRODUCING METHOD

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 723,698, Sep. 14, 1976, abandoned, which is a continuation of Ser. No. 517,173, Oct. 23, 1974, abandoned. This application May 25, 1978, Ser. No. 909,433

Int. Cl.³ G03G 13/14

U.S. Cl. 430—124 **5 Claims**

1. A method of producing electrostatically multiple copies of an object being imaged on the photoconductive coating of an electrophotographic member which comprises:

(a) providing an electrophotographic member having a substrate with a photoconductive coating comprising an r.f. sputtered thin film, microcrystalline, wholly inorganic, dense, semiconductor material wherein the crystallites forming the coating are generally orthogonally oriented relative to the substrate, the coating having a dark resistivity of at least 10^{12} ohm-centimeters and a ratio of dark and light resistivity of at least 10^4 and being electrically anisotropic, the coating at least

being capable of accepting a charge and holding said charge at or below the surface to the extent that the latent image which is capable of being achieved thereat is substantially unaffected by toner development or transfer,

(b) charging the coating only from the coating side of said member with a uniform charge at or below the surface of the coating and holding the charge thereat,

(c) exposing the charged coating immediately following the completion of charging, to a projected image of the object to achieve a latent charge image with the charge at or below the surface of the coating,

(d) toning the coating to achieve a visible toned image,

(e) transferring the toned image to a receptor to achieve a copy of the projected image,

(f) repeating steps (d) and (e) for at least another time to provide at least a second copy of the projected image, but without repeating steps (b) and (c), all of the steps of charging, exposing, toning and transferring being carried on without exposing the coating to ambient light, and the steps of at least (c) exposing and (e) transfer being effected for plural copies without further charging to establish electric fields, the toning and transferring being effected while substantially maintaining the charge relationship and magnitude thereof along the dark decay curve characteristic of said photoconductive coating whereby the step at least of transfer is effected for plural copies without heating or requiring supplementation of the fields representing the latent image.

4,241,161

PROCESS FOR TRANSFERRING A MAGNETIZABLE DEVELOPING POWDER IN ELECTROSTATIC IMAGE DEVELOPMENT

Hendrik Easing, Velden, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Oct. 1, 1979, Ser. No. 81,005

Claims priority, application Netherlands, Oct. 4, 1978, 7810011

Int. Cl.[3] **B05D** *1/06*

U.S. Cl. 430—126 **7 Claims**

1. In a process for transferring a magnetizable developing powder in electrostatic image development, wherein the powder has a specific resistance greater than 10^{13} Ohm.cm. and has been applied imagewise, corresponding to a charge image, on an insulating substrate, including the steps of bringing the substrate with the powder image in contact with a receiving material to which the powder is to be transferred, applying a charge to the free side of the receiving material, transferring the powder and subsequently separating the receiving material from the substrate, the improvement therein comprising applying two separate charges to the free side of the receiving material during the period of contact with the substrate, the first of such charges having a polarity opposite to that of the charge image and the second of such charges having the same polarity as that of the charge image and being greater than the first.

4,241,162

LIGHT SENSITIVE PHOTORESIST MATERIALS

Yoshio Hatano; Takahiro Kohashi, both of Hachioji; Michiaki Hashimoto, Kokubunji, and Saburo Nonogaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

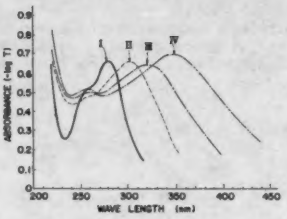
Continuation-in-part of Ser. No. 592,357, Jul. 1, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 747,040

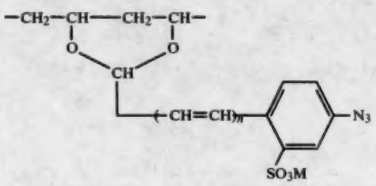
Claims priority, application Japan, Jul. 1, 1974, 49-74344

Int. Cl.[2] **G03C** *1/68, 1/52;* **C12P** *33/10*

U.S. Cl. 430—195 **21 Claims**

1. A water-soluble light sensitive photoresist composition consisting essentially of at least one photoresist polymer which is soluble in water but rendered insoluble by exposure to light and having at least one structural unit represented by the following general formula:





wherein n represents an integer from 1 to 6 and M represents an atom or an atomic group capable of being converted into a cation in an aqueous solution, and the ratio of the structural unit represented by said general formula to the total units in the photoresist polymer ranges between about 0.05 to 8%, the remaining structural units in said polymer being those of an alcoholic hydroxyl group-containing polymer.

4,241,163

PHOTOGRAPHIC ELEMENTS CONTAINING ENCAPSULATED POLYMERS COORDINATED WITH METAL IONS

Drewfus Y. Myers, Jr., Pittsford, and George H. Hawks, III, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,676

Int. Cl.[3] **G03C** *1/40, 7/00, 5/54*

U.S. Cl. 430—213 **23 Claims**

1. In a photographic element comprising a support having thereon at least one layer containing a dye mordant, at least one silver halide emulsion layer and at least one layer containing a chelating dye or chelating dye-forming material, the improvement wherein the layer containing the dye mordant comprises a hydrophilic vehicle having dispersed therein a particulate polymeric material encapsulated with a member selected from the group consisting of (1) a chelating polymer wherein said element comprises either in the mordant layer or in a layer adjacent the mordant layer, a source of metal ions and (2) a metal chelated with a chelating polymer.

4,241,164

HIGHLY-SENSITIVE HIGH-CONTRAST PHOTOGRAPHIC MATERIALS

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Nobuo Sakai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 863,000, Dec. 21, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,480

Claims priority, application Japan, Dec. 30, 1976, 51-157910

Int. Cl.[2] **G03C** *5/30, 1/06*

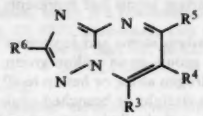
U.S. Cl. 430—264 **10 Claims**

1. A negative image forming process which comprises imagewise exposing to light a photographic light-sensitive material comprising a support having thereon at least one silver halide photographic emulsion layer containing substantially surface latent image type monodispersed silver halide grains

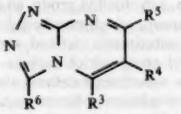
and providing a negative image, at least one hydrophilic colloid layer of said photographic material containing a compound represented by the general formula (I)

$$R^1NHNHCOR^2 \quad (I)$$

in an amount of about 10^{-4} to about 10^{-1} mole/mole-Ag, wherein R^1 represents an aryl group and R^2 represents a hydrogen atom, a phenyl group, or an unsubstituted alkyl group having 1 to 3 carbon atoms; and a compound represented by the general formula (II) or (III);



(II)



(III)

wherein R^3, R^4, R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an amino group, a hydroxyl group, an alkoxy group, an alkylthio group, a carbamoyl group, a halogen atom, a cyano group, a carboxyl group, an alkoxycarbonyl group, or a heterocyclic ring; wherein said R^3 and R^4 or said R^4 and R^5 may combine and form a 5-membered or 6-membered ring and wherein at least one of R^3 and R^5 represents a hydroxyl group and developing said photographic light-sensitive material with a developing solution containing a developing agent selected from the group consisting of aminophenols and a hydroquinone compound and, containing about 0.1 mol/liter or more of sulfite ion and having a pH of about 11.0 to about 12.3.

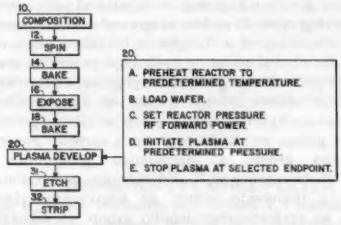
4,241,165
PLASMA DEVELOPMENT PROCESS FOR PHOTORESIST

Henry G. Hughes, Phoenix, and Jed V. Keller, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 811,493, Jun. 30, 1977, which is a continuation-in-part of Ser. No. 784,102, Apr. 4, 1977, which is a continuation-in-part of Ser. No. 697,303, Jun. 17, 1976. This application Sep. 5, 1978, Ser. No. 939,586

Int. Cl.³ G03C 5/24

U.S. Cl. 430—269 **26 Claims**



1. In the art of making a resist mask from a patterned resist coating on a substrate wherein said coating has exposed and non-exposed areas corresponding to the pattern for said mask in said coating, the improvement comprising:

(a) the dry process step of subjecting said coating on said substrate to plasma action to preferentially remove the resist of one of said areas relative to the other area whereby said resist in said one area is removed faster than said resist in the other of said areas; and

(b) terminating said plasma action when said resist of said one area is removed and said resist of said other area remains and is of a thickness to provide a resist mask function on said substrate.

26. In the art of resist technology wherein a coating of resist is applied to a substrate having material below said coating, the processing of said resist for the purpose of making a resist mask on said substrate, then using said resist mask, and thereafter removing said resist mask from said substrate, the steps for accomplishing said purpose comprising:

(a) applying as a coating a substantially uniform layer of resist to material on said substrate;

(b) effecting a pattern in said layer of resist to provide a first area and a second area in said resist;

(c) subjecting said substrate with said resist layer thereon to dry plasma action in equipment for developing said resist layer whereby to remove the resist from one of said areas faster than from said other area, and stopping said plasma action after the resist in said one of said areas is completely removed and resist in said other area remains to serve as a mask on said substrate;

(d) maintaining said substrate with said patterned resist mask thereon in said equipment to be subjected to further plasma action therein and treating said material on said substrate through said one area of said resist mask to plasma action; and

(e) thereafter maintaining said substrate with said patterned resist mask thereon in said equipment and subjecting the same to still further plasma action to strip said resist mask from said substrate after it is used for said treating.

4,241,166
PHOTOPOLYMERIZABLE COMPOSITION COMPRISING A MONOAZO DYE AS CONTRAST COLORANT

Kurt Klüpfel; Heide Sprengel, both of, Wiesbaden; Walter Deucker, and Hansjörg Vollmann, both of Bad Soden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

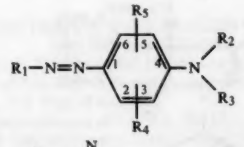
Filed Feb. 26, 1979, Ser. No. 15,248

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807933

Int. Cl.³ G03C 1/68

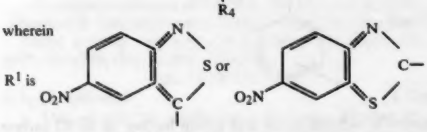
U.S. Cl. 430—281 **4 Claims**

1. A photopolymerizable mixture comprising a compound with at least two terminal ethylenically-unsaturated groups, a boiling point above 100° C. and which is capable of addition polymerization, a polymeric binder, a photoinitiator, and a monoazo dye corresponding to Formula I:



(I)

wherein



R_2 and R_3 are alkyl or alkenyl groups which may be substituted, and

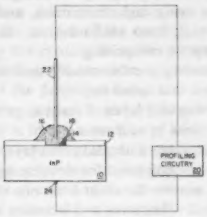
R_4 and R_5 are hydrogen or halogen atoms, or alkyl or alkoxy groups.

4,241,167

ELECTROLYTIC BLOCKING CONTACT TO INP

David A. Collins, and Derek L. Lile, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,466
Int. Cl.[3] H01L *21/66*
U.S. Cl. 430—314 4 Claims



1. A liquid barrier contact on InP comprising:
approximately 40% aqueous solution of tartaric acid;
approximately 30% aqueous peroxide;
said tartaric acid and said hydrogen peroxide being combined
in an approximate 3:1 ratio, respectively, by volume.

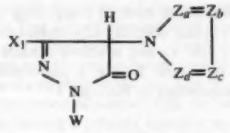
4,241,168

PHOTOGRAPHIC COUPLER

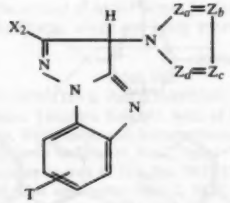
Atsuaki Arai; Keisuke Shiba; Minoru Yamada, and Nobuo Furutachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 604,364, Aug. 13, 1975, abandoned.
This application Sep. 21, 1977, Ser. No. 835,278
Claims priority, application Japan, Aug. 13, 1974, 49-92685
The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.
Int. Cl.[2] G03C *1/40*
U.S. Cl. 430—503 12 Claims

1. A color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer and at least one of said silver halide emulsion layers containing a photographic two-equivalent magenta coupler having the general formula [II] or [III]



(II)



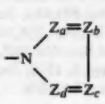
(III)

wherein W represents an aryl group having up to 40 carbon atoms, which may be substituted with one or more of an alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, a cycloalkenyl group, a halogen atom, a nitro group, a cyano group, a thiocyano group, an aryl group, an alkoxy group, an aryloxy group, a carboxy group, an alkylcarbonyl group, an arylcarbonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfo group, an acyloxy group, a sulfamoyl group, a carbamoyl group, an acylamino group, a diacylamino group, a ureido group, a thioureido group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxy(thiocarbonyl-)amino group, an aryloxy(thiocarbonyl)amino group, a sulfamido group, a heterocyclic group, an arylsulfonyloxy group, an alkylsulfonyloxy group, an arylsulfonyl group, an alkylsulfonyl group, an arylthio group, an alkylthio group, an alkylsulfinyl group, an arylsulfinyl group, an alkylamino group, a dialkylamino group, an anilino group, an N-alkylanilino group, an N-arylanilino group, an N-acylamino group, a hydroxy group and a mercapto group;

X_1 has up to 40 carbon atoms and represents an acylamino group;

X_2 has up to 40 carbon atoms and represents an acylamino group, a ureido group, or an anilino group;

T represents a hydrogen atom; or has up to 40 carbon atoms and represents a straight or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group or; a cycloalkenyl group, which may be substituted with one of more of the substituents defined above for the aryl group W; an aryl group which may be substituted with one or more the substituents defined above for the aryl group W, a 5- or 6-membered heterocyclic group containing at least one of an oxygen, sulfur or a nitrogen atom, which may be substituted with one of more of the substituents defined above for the aryl group W; a cyano group, a thiocyano group; an alkoxy group; an aryloxy group; a halogen atom; a carboxy group; an alkoxycarbonyl group; an aryloxycarbonyl group; an acyloxy group; an alkylcarbonyl group; an arylcarbonyl group; an alkylthiocarbonyl group; an arylthiocarbonyl group; a sulfo group; a sulfamoyl group; a carbonyl group; an acylamino group; a diacylamino group; a ureido group; a thioureido group; an alkoxycarbonylamino group; an aryloxycarbonylamino group; an alkoxy (thiocarbonyl)amino group; an aryloxy(-thiocarbonyl)amino group; a sulfamido group; an alkylsulfonyloxy group; an arylsulfonyloxy group; an arylsulfonyl group; an alkylsulfonyl group; an arylthio group; an alkylthio group; an alkylsulfinyl group; an arylsulfinyl group; an alkylamino group; a dialkylamino group; an anilino group; an N-arylanilino group; an N-alkylanilino group; an N-acylanilino group; a hydroxy group or a mercapto group; and Z_a, Z_b, Z_c and Z_d in the



moiety may be the same or different and each represents (a) a methine group, which may be substituted with a substituent having up to 40 carbon atoms and selected from the group consisting of a straight or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, a cycloalkenyl group, an aryl group, a heterocyclic group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aralkyloxycarbonyl group, an alkoxy group, an aryloxy group, an alkylthio group, a carboxy group, an acylamino group, a diacylamino group, an N-alkylacylamino group an N-arylacylamino group, a ureido group, a thioureido group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkoxy(thiocarbonyl)amino group, an aryloxy(thiocarbonyl)amino group, an anilino group, an alkylamino group, a cycloamino group, an alkylcarbonyl group, an arylcarbonyl group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a cyano group, an acyloxy group, a sulfonyloxy group, a halogen atom, a sulfo group, and a nitro group; or (b) an —N= group, with the proviso that the nigtrogen-containing heterocyclic moiety formed by Z_a,

Z_b, Z_c, Z_d and the nitrogen atom is a monocyclic 5-membered aromatic heterocyclic group.

4,241,169

GELATIN-POLYESTER-AZIRIDINE PRODUCT SUBBING LAYER FOR POLYESTER PHOTOGRAPHIC BASE

Ray A. Work, III, Hendersonville, N.C., and Richard P. Pankratz, Circleville, Ohio, assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 887,344, Mar. 20, 1978, Pat. No. 4,181,528, which is a continuation-in-part of Ser. No. 827,594, Aug. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 791,516, Apr. 27, 1977, abandoned. This application May 21, 1979, Ser. No. 40,922

Int. Cl.³ G03C *1/80*

U.S. Cl. 430—532 **11 Claims**

1. A photographic element comprising an energy-treated polyester support, a photosensitive silver halide emulsion layer on said support, and a subbing layer between, and in contact with, both the support and the emulsion layer to improve adhesion of the emulsion to the support, wherein the subbing layer is a reaction product of gelatin, a water-soluble polyester, and a polyfunctional aziridine crosslinking agent.

9. In a photographic element consisting essentially of

(1) a biaxially oriented heat-set energy-treated polyethylene terephthalate support, and

(2) a photosensitive gelatino-silver halide emulsion on said support,

the improvement wherein a single subbing layer is positioned between the support and the emulsion layer to improve adhesion of the emulsion to the support, and is the reaction product of

(1) gelatin,

(2) a polyester of diethylene glycol, ethylene glycol, terephthalic acid, isophthalic acid, azelaic acid, and the sodium sulfonate salt of isophthalic acid,

(3) a member selected from the group consisting of trimethylol propane tri-[β-(N-aziridinyl) propionate], pentaerythritol-tri-[β-(N-aziridinyl) propionate], and trimethylolpropane tri-[β-(N-{methylaziridinyl}) propionate].

4,241,170

MODIFIED POLYESTER FILMS

John H. Bayless, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 890,485, Mar. 29, 1978, which is a continuation-in-part of Ser. No. 788,780, Apr. 19, 1977, abandoned. This application Aug. 14, 1979, Ser. No. 67,353

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—533 **4 Claims**

1. A photographic element comprising a film support coated with one or more photosensitive silver halide emulsions, said support being a biaxially oriented, heat set linear polyester having a water vapor permeability of 160–1100 IPV/mil as measured by ASTM Standard Procedure No. F-372,73, said polyester being comprised of a reaction product of (1) a glycol diester of a dicarboxylic acid, (2) a high molecular weight polyethylene glycol, and (3) an alkali metal salt of a sulfonic acid-substituted dicarboxylic acid ester.

4,241,171

HARDENER IN CARRIER LAYER

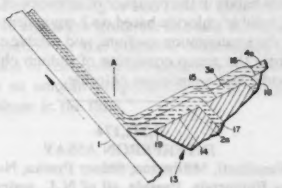
Roger C. Clapp, Wellesley, and Edward J. Choinski, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 21, 1979, Ser. No. 13,160

Int. Cl.³ G03C *1/78, 1/30, 1/76*; A21D *4/00*

U.S. Cl. 430—539 **7 Claims**

1. The process of manufacturing a forehardened photographic product, comprising the steps of coating a plurality of superposed liquid layers on a moving web of material comprising a base for the product, in which a first layer adjacent the base comprises a solution of a diffusible hardener free of gelatin, a second layer adjacent said first layer is initially free of any hardener and polymeric materials cross-linkable by the hardener, and at least a third layer contains a polymer cross-linkable by the hardener, and drying said coated layers while said hardener diffuse through said layers to cross-link said polymer in said third layer.



4,241,172

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kenichiro Okaniwa; Takashi Uchida; Morio Kobayashi; Hiroshi Sugita, and Takashi Sasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

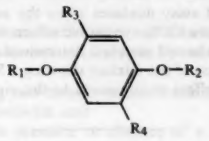
Filed May 24, 1979, Ser. No. 42,084

Claims priority, application Japan, Jun. 1, 1978, 53/66199

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—548 **7 Claims**

1. A color photographic material comprising a support and light-sensitive silver halide emulsion layer thereon, characterized by containing a coupler represented by the following general formula [I];



wherein R_1, R_2, R_3 and R_4 individually represent a substituted or unsubstituted alkyl, alkenyl, aryl or cycloalkyl group, or $[A(X)_n]_mCp$ in which Cp represents a cyano coupler, magenta coupler or yellow coupler, A represents a substituted or unsubstituted divalent aliphatic group, X represents a divalent group, and m and n individually represent a value of 0 or 1, provided that at least one of R_1, R_2, R_3 and R_4 is $[A(X)_n]_mCp$.

4,241,173

PROCESS FOR THE PREPARATION OF SILVER HALIDE EMULSIONS

Wilhelm Saleck, Schildgen, and Harald von Rintelen, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 704,057, Jul. 9, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,377

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531599; Oct. 3, 1975, 2544152

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—569 **2 Claims**

1. The process for producing a fine-grain without loss of sensitivity in the preparation of light sensitive silver halide emulsions of which the silver halide contains at least 40 mol% of silver bromide and from 0 to 15 mol% of silver iodide and from 0 to 60 mol% of silver chloride by reacting a soluble silver salt with at least the equivalent amount of an aqueous halide solution and precipitating the silver halide in the pH

range of between 5.0 and 9.0, wherein the improvement comprises producing at least 20% reduction in grain size of said silver halide without a loss of sensitivity and preventing a loss of sensitivity in said emulsion by carrying on the precipitation of said silver halide in the presence of an excess of at least 1 mol of a water soluble chloride based on 1 equivalent of silver ions present in the precipitation medium, said soluble chloride being selected from the group consisting of sodium chloride, potassium chloride, and ammonium chloride.

4,241,174

INTERFERON ASSAY

Philip C. Familletti, Millington; Sidney Pestka, North Caldwell, and Sara Rubinstein, Passaic, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 24, 1978, Ser. No. 963,256
Int. Cl.³ C12Q *1/70*; C12N *5/02*
U.S. Cl. 435—5 **6 Claims**

1. An improved assay for interferon comprising the following steps in combination:

a. contacting a serially diluted and segregated interferon containing sample in the presence of a cell support medium with a viable cell line preparation in the form of a cell suspension, said cell line known to be sensitive to the interferon type to be assayed, so as to form an interferon-cell line mixture in the form of a suspension;

b. allowing said interferon-cell line mixture to incubate from 0 to 1 hour;

c. adding a challenge virus preparation to each of said segregated, serially diluted interferon-cell line mixtures and allowing the resulting mixtures to incubate from about 12 to 18 hours;

d. providing a virus control mixture comprising said viable cell line preparation and said challenge virus preparation, and a cell control comprising said viable cell line preparation;

e. reading said assay mixtures when the said virus control mixture shows 100% cytopathic effect, whereby the titer of interferon in said sample is determined as the reciprocal of the dilution of the mixture showing a 50% reduction in cytopathic effect as compared to the virus and cell controls.

4,241,175

ASSAY FOR HEPATITIS B CORE ANTIBODY

William J. Miller, North Wales; William J. McAleer, Ambler, and Lynn T. Callahan, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 18, 1978, Ser. No. 970,721
Int. Cl.³ C12Q *1/66*
U.S. Cl. 435—7 **10 Claims**

1. A method for determining the presence of hepatitis B core antibody (HB_cAb) in biological fluid comprising

(a) directly adhering hepatitis B core antigen (HB_cAg) derived from Dane particles to a solid surface wherein HB_cAg is adhered to the surface by adsorption in the presence of an amount of a nonionic surfactant having from about 15 to about 35 oxyethylene units effective to cause adherence,

(b) contacting the surface with the biological fluid,

(c) contacting the surface with a hepatitis B core antibody (HB_cAb)-enzyme conjugate,

(d) contacting the surface with an enzyme substrate solution, and

(e) measuring the optical density after development of the enzyme substrate solution.

5. A diagnostic reagent comprising a solid surface having directly adhered thereto hepatitis B core antigen (HB_cAg) derived from Dane particles wherein HB_cAg is adhered by adsorption in the presence of a nonionic surfactant having from about 15 to about 35 oxyethylene units present in an amount effective to cause adherence.

4,241,176

MAGNETIC GEL SUITABLE TO IMMUNOENZYMATIC DETERMINATIONS

Stratis Avrameas, La Celle Saint Cloud, and Jean-Luc Guesdon, Paris, both of France, assignors to Etablissement declare d'Utilite Publique diti Institut Pasteur, Paris, France

Continuation of Ser. No. 746,553, Dec. 1, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,944
Claims priority, application France, Dec. 2, 1975, 75 368891
Int. Cl.³ C12Q *1/66*; C07G *7/00*
U.S. Cl. 435—7 **5 Claims**

1. A method for the immunoenzymatic assay of a biological liquid containing antibodies or antigens which comprises incubating said liquid in contact with a magnetic gel comprising particles of about 50 to 500 μm of a gel selected from the group consisting of polyacrylamide, agarose and mixtures thereof, magnetic particles embedded within the gel, protein molecules, and a coupling agent chemically linking the gel with embedded magnetic particles to the protein molecules, washing the gel so incubated, magnetically separating the gel from the washing medium, incubating the gel with enzyme-labelled antibodies or antigens, magnetically separating the gel, and measuring the enzyme activity of the gel, which indicates the content of antibodies or antigens contained in the liquid being assayed.

3. A magnetic gel for immunoassays comprising particles of about 50 to 500 μm of a polyacrylamideagarose gel, magnetic particles embedded within the gel, said particles being selected from the group consisting of magnetite, ferrite and iron powder particles, protein molecules, and a coupling agent chemically linking the gel with embedded magnetic particles to the protein molecules.

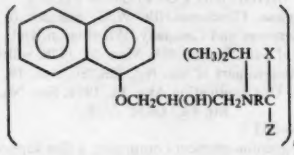
4,241,177

PROPANOLOL ANTIGEN CONJUGATES AND ANTIBODIES

Prithipal Singh, Santa Clara, and Marcel R. Pirio, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Aug. 28, 1978, Ser. No. 937,248
Int. Cl.³ C12Q *1/66*; C12N *9/96*; A61K *39/00*; C07G *7/00*
U.S. Cl. 435—7 **11 Claims**

1. A compound of the formula:



wherein:

R is an aliphatic linking group of from 1 to 4 carbon atoms;

X and Z are taken together to form oxo or can each be hydrogen;

A is an antigenic poly(amino acid) or an enzyme;

n is on the average from 1 to the molecular weight of A divided by 1000.

10. An antibody prepared by administering to a host animal an antigen conjugate of a propranolol derivative having the formula of claim 1, and which has sites capable of specifically binding to propranolol.

11. A method for determining the presence of a drug which is propranolol in a medium suspected of containing said drug which comprises:

forming, at a pH in the range of about 5–10 and at a temperature of from about 10°–50° C., an aqueous solution of said medium, an enzyme conjugate of said drug according to claim 1, and antibody having sites capable of binding to said drug and said enzyme conjugate, said antibody being at a sufficient concentration to substantially reduce the

enzymatic activity of said enzyme conjugate in the absence of said drug; and

analyzing said solution for the enzymatic activity of said enzyme conjugate in said solution.

4,241,178

PROCESS AND COMPOSITION FOR THE QUANTIFICATION OF GLYCEROL ATP AND TRIGLYCERIDES

Theodore W. Esders, Webster, and Charles T. Goodhue, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 715,797, Aug. 19, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,641

Int. Cl.³ C12Q *1/28, 1/44, 1/48*

U.S. Cl. 435—15 **67 Claims**

1. A method for quantifying triglycerides in an aqueous liquid comprising the steps of:

(a) contacting

(I) a sample of the aqueous liquid and

(II) enzymes and reagents which effect in the presence of triglyceride-positive liquid an ordered sequence of reactions wherein

(A) triglycerides are hydrolyzed to glycerol;

(B) glycerol is converted to L-α-glycerophosphate;

(C) L-α-glycerophosphate is oxidized by α-glycerophosphate oxidase to produce hydrogen peroxide; and

(D) the hydrogen peroxide produced in (C) reacts with a substance having peroxidative activity to produce a detectable change; and

(b) quantitatively detecting the occurrence of said change.

4,241,179

METHOD FOR DETERMINING A TRANSAMINASE IN A BIOLOGICAL FLUID AND REAGENT COMBINATION FOR USE IN THE METHOD

Mathew M. Madappally, Cooper City, Fla., and Giovanni Bucolo, Cupertino, Calif., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 14, 1978, Ser. No. 933,183

Int. Cl.³ C12Q *1/52, 1/32*

U.S. Cl. 435—16 **22 Claims**

1. In a method for determining glutamate oxalacetate transaminase or glutamate pyruvate transaminase present in a biological fluid, wherein L-glutamate is produced from alphaketoglutarate and an amino acid by transamination in the presence of the transaminase in the fluid, said amino acid being L-aspartate in the determination of glutamate oxalacetate transaminase and L-alanine in the determination of glutamate pyruvate transaminase, and the L-glutamate is oxidatively deaminated in a oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the content of the transaminase in the fluid, said fluid also containing an endogenous substance which reacts in an oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide, thereby interfering with the determination, the improvement for obviating the interference caused by the endogenous substance which comprises:

reacting said endogenous substance present in said fluid in an oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate hydrogenase to consume the endogenous substance by conversion thereof to an oxidation product of the reaction with the production of reduced beta-nicotinamide adenine dinucleotide,

reacting the resulting reduced betanicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the reduced beta-nicotinamide adenine dinucleotide to its oxidized form with the reduction of pyruvate to lactate,

thereafter inhibiting the lactate dehydrogenase activity in said fluid,

and thereafter producing in said fluid a quantity of L-glutamate from alpha-ketoglutarate and said amino acid by said transamination for said oxidative deamination thereof and production of reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the content of said transaminase in the fluid.

4,241,180

ENZYMATIC METHOD FOR DETERMINING SURFACTANTS ON SURFACES

Melvin H. Keyes, Sylvania, and Garry L. Moore, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 27, 1978, Ser. No. 881,224

Int. Cl.³ C12Q *1/46*

U.S. Cl. 435—20 **13 Claims**

1. A method for determining the presence of either a non-ionic or ionic surfactant on a surface area without knowledge of whether the surfactant is either non-ionic or ionic, said method comprising:

(a) applying to said area an enzyme adapted to bind with any surfactant present, said enzyme being bound without deactivation by a non-ionic surfactant and said enzyme being both bound and deactivated by an ionic surfactant, and an indicator responsive to a reaction product of said enzyme and a reactive substrate to exhibit a detectable response,

(b) binding any surfactant present on said area by said enzyme,

(c) adding an ionic surfactant to said area to bind and deactivate any unbound enzyme left by said first mentioned surfactant,

(d) contacting said enzyme on said surface with a substrate reactive therewith, and

(e) noting the presence or absence of a response by said indicator, the presence of a response indicating that said first mentioned surfactant was non-ionic, and the absence of a response indicating that said first mentioned surfactant was ionic.

4,241,181

BROTH MEDIUM FOR DETECTION OF DNASE-POSITIVE MICROORGANISMS

Marlys E. Lund, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 2, 1979, Ser. No. 35,290

Int. Cl.³ C12Q *1/04*

U.S. Cl. 435—34 **11 Claims**

1. A broth medium for the detection of DNAse-positive microorganisms comprising:

(a) a source of conventional nutrients to support growth of said microorganisms;

(b) a source of essential divalent cations in sufficient concentration to insure activity of said DNAse; and

(c) a biological indicator comprising DNA, toluidine blue and lambda carrageenan in sufficient quantity so that said medium turns to a visually distinguishable reddish-pink or reddish-violet color in the presence of DNAse-positive microorganisms.

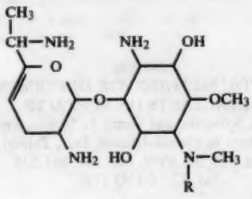
4,241,182

FORTIMICIN FACTORS KG_1, KG_2 AND KG_3 AND PROCESSES FOR PRODUCTION THEREOF

Seigo Takasawa, Hadano; Kunikatsu Shirahata, Machida; Seiji Sato, Machida, and Keiichi Takahashi, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

Filed Mar. 5, 1979, Ser. No. 17,276
Claims priority, application Japan, Mar. 3, 1978, 53-23552
Int. Cl.[3] C12P *19/48;* C12R *1/325*
U.S. Cl. 435—80 5 Claims

1. A process for producing at least one of three Fortimicin factors of the general formula:



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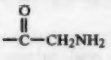
wherein R is



or H, when R is H, one of said factors having the following physicochemical properties:

(1) Melting point: 95°–98° C.;

(2) Specific rotation: $[\alpha]_D^{22} = +58.3°$ (c=0.66, H_2O);

(3) Infrared absorption spectrum (KBr): 3360, 2930, 1675, 1590, 1370, 1110, 1055 and 1000 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=10.7)]:

δ (ppm): 153.1, 101.2, 95.2, 83.4, 83.2, 75.2, 73.4, 62.2, 60.1, 54.8, 48.9, 47.4, 33.6, 25.7, 20.5;

and another of said factors having the following physicochemical properties:

(1) Melting point: 83°–85° C.;

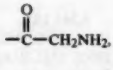
(2) Specific rotation: $[\alpha]_D^{22} = +30°$ (c=0.76, H_2O);

(3) Infrared absorption spectrum (KBr): 3350, 2920, 1675, 1590, 1370, 1090, 1030 and 990 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=10.6)]:

δ (ppm): 153.1, 101.3, 95.3, 82.2, 80.0, 71.3, 71.1, 61.1, 59.3, 53.8, 48.9, 47.3, 35.4, 25.6, 20.5;

and when R is



the remaining factor having the following physiocochemical properties:

(1) Melting point: 135°–138° C.;

(2) Specific rotation:
$[\alpha]_D^{22} = +185°$ (c=0.265, H_2O);

(3) Infrared absorption spectrum (KBr): 3370, 2940, 1640, 1580, 1462, 1110 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=1.2)]:

δ (ppm): 168.8, 146.7, 99.5, 95.9, 76.1, 73.9, 71.4, 66.5, 57.3, 54.2, 52.9, 49.6, 47.2, 41.4, 32.8, 22.2, 16.9;

which comprises culturing a microorganism belonging to the species *Micromonospora olivoasterospora* and capable of producing at least one of said factors in a nutrient medium until substantial antibacterial activity is detected in the culture liquor and thereafter isolating at least one of said factors therefrom.

4,241,183

STARCH LIQUEFACTION PROCESS

Paul R. Witt, and Richard D. Harvey, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Apr. 30, 1979, Ser. No. 34,333
Int. Cl.[3] C12P *19/22*
U.S. Cl. 435—95 3 Claims

1. A process for liquefying starch which comprises adding to starch paste at a temperature above 75° C. an infusion of a malted cereal grain and holding the mixture of starch paste and infusion of malted cereal grain at a temperature above about 75° C. for a time sufficient to liquefy the starch paste to a viscosity of not substantially above about 1500 centipoise.

4,241,184

SECONDARY ALCOHOL DEHYDROGENASE ENZYME AND USE THEREOF

Ching-Tsang Hou; Ramesh N. Patel, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,475, Apr. 14, 1978, abandoned, and Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,302
Int. Cl.[3] C12P *7/26, 7/04;* C12N *1/30, 1/20*
U.S. Cl. 435—148 11 Claims

1. A process for converting a C_3–C_6 secondary alcohol to the corresponding methyl ketone comprising oxidizing said alcohol by contacting said alcohol in a medium, under aerobic conditions, with microbial cells derived from a methylotrophic microorganism or an enzyme preparation derived from said cells, wherein said microorganism has been previously grown under aerobic conditions in a nutrient medium containing a carbon-containing compound which provides the carbon and energy source for growth of the cells and induces C_3–C_6 secondary alcohol dehydrogenase enzyme activity in said cells, and wherein said microorganism is selected from the group consisting of:

Methylosinus trichosporium	(CRL 15 PM1)	NRRL B-11,202;
Methylosinus sporium	(CRL 16 PM2)	NRRL B-11,203;
Methylocystis parvus	(CRL 18 PM4)	NRRL B-11,204;
Methylomonas methanica	(CRL M4P)	NRRL B-11,205;
Methylomonas methanica	(CRL 21 PM7)	NRRL B-11,206;
Methylomonas albus	(CRL M8Y)	NRRL B-11,207;
Methylomonas streptobacterium	(CRL 17 PM3)	NRRL B-11,208;
Methylomonas agile	(CRL 22 PM9)	NRRL B-11,209;
Methylomonas rubrum	(CRL M6P)	NRRL B-11,210;
Methylomonas rubrum	(CRL 20 PM6)	NRRL B-11,211;
Methylomonas rosaceus	(CRL M10P)	NRRL B-11,212;
Methylomonas rosaceus	(CRL M7P)	NRRL B-11,213;
Methylobacter chroococcum	(CRL M6)	NRRL B-11,214;
Methylobacter chroococcum	(CRL 23 PM8)	NRRL B-11,215;
Methylobacter bovis	(CRL M1Y)	NRRL B-11,216;
Methylobacter bovis	(CRL 19 PM5)	NRRL B-11,217;
Methylobacter vinelandii	(CRL M5Y)	NRRL B-11,218;
Methylococcus capsulatus	(CRL M1)	NRRL B-11,219;
Methylococcus minimus	(CRL 24 PM12)	NRRL B-11,220;
Methylococcus capsulatus	(CRL 25 PM13)	NRRL B-11,221;
Methylobacterium organophilum	(CRL 26 R6)	NRRL B-11,222;
Pichia sp.	(CRL-72)	NRRL-Y-11,328;
Torulopsis sp.	(A_1)	NRRL-Y-11,419;
Kloeckera sp.	(A_2)	NRRL-Y-11,420;

and mutants thereof wherein said methyl ketone is produced in isolable amounts.

4,241,185

METHOD OF STABILIZING α-GALACTOSIDASE

Brooks M. Stein, Berthoud, and James C. Linden, Loveland, both of Colo., assignors to The Great Western Sugar Company, Denver, Colo.

Filed Feb. 23, 1979, Ser. No. 14,579
Int. Cl.³ C12N 9/96, 9/40
U.S. Cl. 435—188 5 Claims

1. A method of stabilizing mycelial bound α-galactosidase activity comprising:

(a) suspending mycelia of *Mortierella vinacea* var. raffinose-utilizer (ATCC No. 20034) containing α-galactosidase activity in an aqueous medium;

(b) adding about 5 to about 25 percent by weight glutaraldehyde based upon the dry weight of the mycelia to the aqueous medium;

(c) maintaining the pH of the aqueous medium at about 6.5 to about 8.5; and

(d) mixing the aqueous medium in a manner so as to minimize oxygen inclusion for a period of about 0.25 to about 2.0 hours.

4,241,186

PECTIN CULTURE MEDIA AND METHOD

Jonathan N. Roth, Goshen, Ind., assignor to Conviron, Inc., Goshen, Ind.

Filed Dec. 18, 1978, Ser. No. 970,347
Int. Cl.³ C12N 1/00
U.S. Cl. 435—243 7 Claims

1. A method for preparing a gelled biological growth medium having a pH from about 4 to about 9 in a culture growth container which comprises the steps of:

a. providing a culture growth container,

b. preparing a liquid growth medium including between about ten and about thirty grams per liter of growth medium of a low methoxyl pectin material having less than about seven percent methoxyl content to gel the growth medium as the sole gelling agent;

c. introducing a predetermined amount of calcium ions into an absorbent support material and placing the absorbent support material into the culture growth container; and

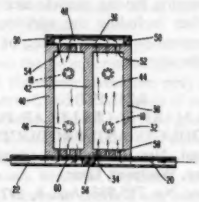
d. combining the growth medium and the calcium ions in said culture growth container to produce gelling of the growth medium.

4,241,187

METHOD AND APPARATUS FOR CELL AND TISSUE CULTURE

David C. White, Maple Grove, Minn., assignor to United States of America, Washington, D.C.

Filed Mar. 27, 1979, Ser. No. 24,247
Int. Cl.³ C12M 3/00
U.S. Cl. 435—284 2 Claims



1. An apparatus for culturing biological cells and tissues employing perfused blood as the nutrient source, comprising:

(a) a housing means provided with a blood inlet means and a blood outlet means;

(b) a pair of culture chambers arranged within said housing means in spaced parallel relation to each other between two opposite walls of said housing means, each culture chamber being defined by a wall of said housing means and a thin flexible blood-compatible microporous membrane superimposed upon said wall and bonded thereto around its periphery, the spacing between said wall and said microporous membrane being such as to maintain said microporous membrane in close contact with cells or tissues introduced into said culture chamber, said microporous membrane being permeable to plasma solutes and to cell products and impermeable to blood cellular components;

(c) a blood flow passageway disposed within said housing means exterior of said culture chambers and extending continuously from said blood inlet means to said blood outlet means, said blood flow passageway including a plurality of sections, each of which extends across a separate parallel area of the surface of said microporous membrane so as to provide contact of said surface with blood perfused through said passageway, said culture chambers being arranged on opposite sides of said blood flow passageway, whereby blood perfused through said passageway simultaneously contacts the surfaces of the microporous membranes of each of said culture chambers;

(d) means in said walls of said housing means communicating with said culture chambers for introduction and retrieval of the cells and tissues; and

(e) connector means for connecting adjacent sections of said blood flow passageway in series, said connector means comprising a conduit closed at each end and extending longitudinally across the ends of the two adjacent sections to be connected perpendicularly to the direction of blood flow through the sections, each of said two adjacent sections being provided with a series of flow ports communicating with said conduit along the length of the conduit, the flow ports in each of said series having a size gradient decreasing in the direction of blood flow through said conduit in order to equalize the blood flow through said flow ports;

said blood inlet means comprising an inlet conduit closed at its downstream end and extending longitudinally across the inlet end of said blood flow passageway, and said blood outlet means comprising an outlet conduit closed at its upstream end and extending longitudinally across the outlet end of said blood flow passageway, said inlet end and said outlet end of said blood flow passageway each being provided with a series of flow ports communicating respectively with said inlet conduit and said outlet conduit along the length of the respective conduit, the flow ports in each of said series having a size gradient decreasing in the direction of blood flow through the respective conduit in order to equalize the blood flow through said flow ports.

4,241,188

CULTURE BOTTLE HAVING STOPPER LOCK

Peter Materia, Wood-Ridge, and Jayraj S. Desai, Closter, both of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 9, 1979, Ser. No. 82,616
Int. Cl.³ C12M 1/24
U.S. Cl. 435—296 8 Claims

1. An assembly for the culturing of microorganisms, comprising:

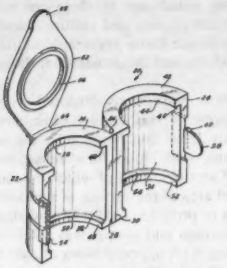
a culture bottle having a neck portion defining an opening therein;

an annular protruding portion extending radially from said neck;

a stopper positioned within said opening; and

a stopper lock movably mounted on said bottle neck, said stopper lock including an inwardly extending upper flange, an inwardly extending lower flange, and side walls interconnecting said flanges, the upper flange capable of engaging the upper surface of said stopper, the lower flange capable of engaging the lower surface of said annular protruding portion, there being a sufficient distance

between said upper and lower flanges to allow said stopper to rise to a height from said opening to allow the venting of the interior of the bottle, the stopper lock being



movable along said neck between position of engagement with the upper surface of the stopper and the lower surface of the protruding portion.

4,241,189

WEAR-RESISTANT FLEXIBLE SHEET MATERIAL AND A METHOD FOR ITS MANUFACTURE

Neville M. Sheldon, Whitley Bay, and Alfred Stern, Newcastle upon Tyne, both of England, assignors to General Foam Products Limited, North Shields, England

Filed Feb. 2, 1978, Ser. No. 874,390

Claims priority, application United Kingdom, Feb. 2, 1977, 04282/77

Int. Cl.[3] **C08J** *9/36;* **B27C** *15/00;* **B29D** *27/00*

U.S. Cl. 521—50 **14 Claims**

1. A process for making wear-resistant flexible sheet material comprising the steps of:

providing a sheet of dense flexible reconstituted polyurethane foam material having a density exceeding about 15 lb/ft^3;

and subjecting said sheet to a pressure of about 5 to 30 tons/ft^2 at a temperature above about 150° C. in the substantial absence of air whereby said sheet is densified and its wear resistance enhanced.

7. Wear-resistant flexible sheet material made by the process of claim 1.

4,241,190

COMPOSITE FOAMED MATERIAL

Seymour Lichter, 8336 Huntington Rd., Huntington Woods, Mich. 48070, and Frank P. Nold, Rte. 2, Box 60, New Castle, Ind. 47362

Continuation-in-part of Ser. No. 878,720, Jan. 17, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,241

Int. Cl.[3] **B29D** *27/00*

U.S. Cl. 521—54 **9 Claims**

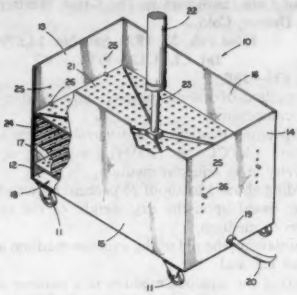
1. A composite foamed material comprising:

a. fragments of resilient, open-celled material;

b. expanded polystyrene beads dispersed among said fragments of open-celled material, said beads being expanded in situ while said open-celled material and said beads dispersed therein are held under compression; and

c. a binder securing together said fragments of open-celled material and said beads,

said open-celled material, beads and binder being present in amounts of about 60% to about 90% of the open-celled material, about 4% to about 15% of the beads, and about 6% to about 25% of the binder, said composite foamed



material having a density of from about 5 to about 30 lbs/ft^3.

4,241,191

MANUFACTURE OF STYRENE SUSPENSION POLYMERS

Hans G. Keppler, Weinheim; Erhard Stahnecker, Heidelberg, and Rolf Moeller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 765,158, Feb. 3, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,327

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609104

Int. Cl.[3] **C08J** *9/18, 9/20*

U.S. Cl. 521—56 **13 Claims**

1. A process for the manufacture of expandable beads of styrene polymer, consisting essentially of polymerizing styrene in aqueous suspension in the presence of a suspension stabilizer,

wherein said suspension stabilizer is used in the amount of from 0.05 to 1% by weight, based on the suspension, said stabilizer being made up of:

(A) from 99 to 50% by weight of particles having a particle size of from 0.01 to 100 μm of a sparingly water-soluble phosphate of a divalent or trivalent metal and

(B) from 1 to 50% by weight of a finely-divided preformed water-insoluble polymer of

(i) from 100 to 90 parts by weight of one or more of the monomers which form water-insoluble homopolymers selected from the group consisting of styrene, butadiene, vinyl chloride, vinylidene chloride, a vinyl ester or an acrylic or methacrylic ester and

(ii) from 0 to 10 parts by weight of one or more monomers which form water-soluble homopolymers, said preformed polymer being employed in the form of an aqueous dispersion having particle sizes up to 10 μm;

said process further including the addition of a blowing agent to the suspension before, during or after the polymerization of the styrene.

4,241,192

PROCESS FOR MAKING CELLULAR POLYVINYL CHLORIDE PRODUCTS AND PRODUCTS THEREOF

Jagadish C. Goswami, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 785,983, Apr. 8, 1977, abandoned, which is a continuation of Ser. No. 598,522, Jul. 25, 1975, abandoned. This application Mar. 8, 1978, Ser. No. 884,781

Int. Cl.[3] **C08J** *9/10*

U.S. Cl. 521—73 **22 Claims**

1. In a process for making a cellular vinyl chloride polymer product by heating a foamable vinyl chloride polymer-containing plastisol, wherein the improvement comprises incorporating in the plastisol, which has a fusion and expansion temperature of about 200° F. to 300° F., vinyl chloride copolymer of

vinyl chloride, vinyl acetate, and a bis(hydrocarbyl)vinylphosphonate, an effective amount for foaming of a blowing agent selected from the group consisting of a mixture of benzene sulfonyl hydrazide and 4,4'-oxybis (benzene sulfonyl hydrazide), a mixture of toluene sulfonyl hydrazide and 4,4'-oxybis (benzene sulfonyl hydrazide), and 4,4'-oxybis (benzene sulfonyl hydrazide) alone, and an effective amount of non-volatile organic base or oxidizing agent activator for said blowing agent, said activator being selected from the group consisting of urea, the C_2–C_{14} alkyl substituted ureas, the C_2–C_{14} monoalkyl, dialkyl and trialkyl monoamines, the C_2–C_{12} dialkyl or trialkyl diamines, the C_2–C_{14} dialkyl triamines, and the diaryl and C_1–C_{12} dialkyl peroxides.

4,241,193

POLYIMIDES

John Gagliani, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 877,516, Feb. 13, 1978, abandoned. This application Aug. 21, 1978, Ser. No. 935,378

Int. Cl.[2] **C08J** *9/02*

U.S. Cl. 521—77 **8 Claims**

1. A process of making a rigid, intumescent, polyimide foam which comprises the steps of: preparing a resinous precursor by forming a composition which is essentially a stoichiometric mixture of aromatic diamine and tetracarboxylic acid ester constituents and dispersing a filler composed of particulate solids in said composition; heating said resinous precursor to a temperature in the range of 210°–315° C. to produce a polyimide foam artifact of selected configuration; and then heating said artifact under a pressure in the range of 3–20 psig and at a temperature in the range of 230°–315° C. for a time sufficient to produce a permanent set in said foam and thereby increase the rigidity and structural strength of the artifact.

4,241,194

PROCESS FOR THE PRODUCTION OF ALKALI-METAL-CELLULOSE-SILICATE FOAMS AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 29,202, Apr. 12, 1979. This application Jan. 7, 1980, Ser. No. 110,081

Int. Cl.[3] **C08J** *9/00*

U.S. Cl. 521—82 **6 Claims**

1. The process for the production a cellular solid aminoplast-cellulose product by the following steps:

(a) mixing 3 parts by weight of a cellulose-containing plant with 1 to 2 parts by weight of an oxidated silicon compound and 2 to 5 parts by weight of an alkali metal hydroxide;

(b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby

(c) producing a water-soluable alkali metal-cellulose-silicate condensation product,

(d) admixing 1 to 5 parts by weight of an amino compound, selected from the group consisting of urea, thiourea, alkyl ureas, alkyl thioureas, melamine, polyamines, aniline and mixtures thereof, and 0.5 to 5 mols of an aldehyde per mol of the amino and selected from the group consisting of an aqueous solution of formaldehyde, acetaldehyde, propionaldehyde, furfural, crotonaldehyde, acrolein, butyl aldehyde, pentanals, hexanals, heptanals, octanals, paraformaldehyde and mixtures thereof, are mixed with 2 parts by weight of the alkali metal-cellulose-silicate condensation product, as produced in step (c), then agitated at a temperature between ambient temperature and 100° C. for 10 minutes to 12 hours, thereby producing an aminoplast-alkali metal-cellulose-silicate resin; then an acid compound, selected from the group consisting of a mineral acid, an organic acid, an inorganic hydrogen-containing salt and mixtures thereof, is added to said resin until the ph is 5 to 7 while agitating until said resin begins to expand, thereby producing a cellular solid aminoplast-cellulose product.

4,241,195

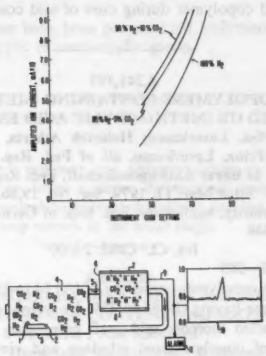
PROTECTING ELECTRICAL APPARATUS WITH GAS GENERATING COMPOUNDS

David C. Phillips, Penn Hills, and James D. B. Smith, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 751,403, Dec. 16, 1976, Pat. No. 4,149,161. This application Nov. 17, 1978, Ser. No. 961,586

Int. Cl.[3] **C08K** *5/16, 5/41;* **B32B** *27/04;* **C08G** *65/48*

U.S. Cl. 525—3 **11 Claims**



1. A composition comprising a compound selected from the group consisting of formamidine sulfinic acid, methenamine mandelate, and mixtures thereof, and a solution of a resinous carrier curable at 60° C. stable when cured, and unreactive with said compound.

4,241,196

COATING COMPOSITION CATALYZED WITH PHOSPHONIC ACID DERIVATIVE - #1

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1979, Ser. No. 93,365

Int. Cl.[3] **C08L** *37/00*

U.S. Cl. 525—161 **15 Claims**

1. A thermosetting coating composition adapted for low temperature bake applications which, exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a copolymer bearing pendent epoxy functionality and being free of pendent hydroxy functionality, and having a number of average molecular weight ($\overline{M}_n$) of between about 1500 and about 10,000 and a glass transition temperature (Tg) of between about −25° C. and about 70° C., said copolymer consisting of between about 10 and about 30 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality and between about 90 and about 70 weight percent of other monoethylenically unsaturated monomers;

(B) a reactive catalyst comprising at least one phosphonic acid derivative having the formula:

$$R-[P(OH)_2]_n$$

wherein n=1 to 2 and R is selected from the group consisting of alkyl, cycloalkyl and aryl radicals;

(C) an amine-aldehyde resin crosslinking agent; and

(D) up to 45 weight percent based on the total weight of (A), (B), (C), and (D) of a hydroxy functional additive having a number average molecular weight ($\overline{M}_n$) of between 150 and about 6000,

said phosphonic acid derivative being included in said composition in an amount sufficient to provide between about 0.8 and about 1.4 equivalents of acid functionality for each equivalent of pendent epoxy functionality on said copolymer, and said amine-aldehyde resin crosslinking agent being included in said composition in an amount sufficient to provide at least about 0.4 equivalents of nitrogen crosslinking functionality for each equivalent of hydroxy functionality included in said composition as a group on an initial component thereof or generated in situ as a result of esterification of said pendent epoxy functionality of said copolymer during cure of said coating composition.

4,241,197

GRAFT COPOLYMERS CONTAINING (METH)ACRYLIC ACID OR (METH)ACRYLIC ACID ESTERS

Ulrich Steffen, Leverkusen; Heinrich Alberts, Cologne, and Richard Prinz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,363

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811549

Int. Cl.[3] **C08L** *23/00*

U.S. Cl. 525—309 **4 Claims**

1. A graft copolymer consisting of (A) 15 to 25% by weight of a graft base having (B) 85 to 75% by weight of a monomer mixture grafted thereon, said graft base being a copolymer consisting of copolymerized ethylene and vinyl ester, said copolymer having a Mooney viscosity (ML4/100° C.) of from 15 to 80 and an intrinsic viscosity of from 0.5 to 1.5 dl/g. and containing from 1 to 75% by weight of vinyl ester, said vinyl ester being a vinyl ester of an alkanoic acid having from 1 to 10 carbon atoms in the alkyl moiety thereof and said monomer mixture consisting of (I) from 5 to 50% by weight of (meth)acrylonitrile, (II) 94.9 to 35% by weight of at least one aromatic monovinyl compound and (III) from 0.1 to 15% by weight of (meth)acrylic acid or a (meth)acrylic acid C_1–C_{12} alkyl ester.

4,241,198

RELEASING AGENT

Naotake Kobayashi, Utsunomiya, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,419

Claims priority, application Japan, Dec. 29, 1977, 52-158184

Int. Cl.[3] **C08F** *26/12, 220/18;* **C08C** *19/42*

U.S. Cl. 525—360 **14 Claims**

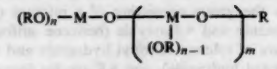
1. A composition suitable for treating a base member to impart a releasing property thereto consisting of:

(A) a copolymer which is produced by copolymerization of:

(a) a monomer mixture comprising 70 to 40 percent by weight stearyl acrylate and/or stearyl methacrylate and 30 to 60 percent by weight acrylonitrile; and

(b) an ethylenically unsaturated compound being copolymerizable with said monomer mixture and having functional groups reactive with metal alcoholate, said ethylenically unsaturated compound being used in an amount of 0.5 to 30 part by weight per 100 part by weight of said monomer mixture; and

(B) a metal alcoholate being represented by the following general formula:



wherein R is a hydrocarbon group having 1 to 20 carbon atoms or this hydrocarbon group further having oxygen atom, nitrogen atom, sulfur atom or halogen atom, including the case R being identical or not identical with each other in the general formula and R being combined with each other, n is an integer from 1 to 4, m is an integer from zero to 10, and M is a metal element belonging to III, IV and V groups of the periodic table.

4,241,199

NOVEL POLYESTER DIOLS

Raymond A. Dunleavy, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,625

Int. Cl.[3] **C08L** *67/06;* **C08G** *63/76*

U.S. Cl. 525—445 **9 Claims**

1. A polyester diol comprising:

(a) aliphatically saturated divalent diacyl moieties of the formula

wherein R is a single bond connecting the two carbonyl groups or a divalent organic group free of aliphatic unsaturation, and olefinically unsaturated divalent diacyl moieties of the formula

wherein R' is a divalent olefinically unsaturated organic group, said diacyl moieties being present in a mole ratio of 0.25 to 3 moles of said diacyl moieties essentially free of aliphatic unsaturation per mole of said olefinically unsaturated diacyl moieties; and

(b) divalent dioxy moieties having the formula: —OR''O— wherein R'' is a divalent organic group interconnecting the oxy groups shown in said formula and each oxy group shown by said formula is bonded to a noncarboxyl atom of said R'' group;

said diacyl moieties being bonded through ester linkages to said dioxy moieties in a mole ratio of at least 1.75 moles of all said dioxy moieties per mole of all said diacyl moieties; and said polyester diol

(i) being end-blocked essentially only by noncarboxylic hydroxyl groups bonded to dioxy moieties as defined in (b) hereinabove; and

(ii) having an acid number of less than 3.

4,241,200

POLYURETHANE ELECTROCOATING COMPOSITION

James T. K. Woo, Medina, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,909

Int. Cl.[3] **C08G** *18/30*

U.S. Cl. 525—455 **4 Claims**

1. In a process for electrodeposition of heat-curable electrocoating composition containing a matrix polymer and aminoplast cross-linking compound dispersed into an aqueous electrocoating bath solution, said matrix polymer containing carboxyl or hydroxyl groups for cross-linking with said aminoplast resin upon subsequent heat curing the electrocoating composition, the improvement comprising:

providing as said matrix polymer a polyurethane-acrylic copolymer containing on a weight basis between about 10% and 90% polyurethane, between about 10% and 70% copolymerized acrylic monomers, and 0% to 50% copolymerized ethylenically unsaturated monomers other than said acrylic monomers.

4,241,201

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 30,038

Int. Cl.[3] **C08G** *8/20, 8/24, 8/28*

U.S. Cl. 525—503 **15 Claims**

1. A phenolic novolak molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin wherein (a) from about 55% to about 90% of the available theoretical para-phenyl linkages in the chain are bridged to a phenyl group, (b) the carbon chains linked between adjacent hydroxyl-substituted phenyl nuclei have 1 to 5 carbon atoms, and (c) the hydroxyl-substituted phenyl nuclei are capable of chain growth at unsubstituted ortho and para-positions of said nuclei.

4,241,202

ALLYL-ACRYLIC MONOMERS, THEIR PREPARATION AND POLYMERS DERIVED THEREFROM

Jean-Pierre G. Senet, Melun, and Patrice M. Le Roy, Ballancourt sur Essonne, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

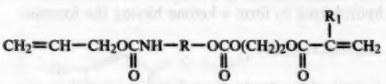
Division of Ser. No. 829,474, Aug. 31, 1977, Pat. No. 4,199,526. This application Dec. 28, 1978, Ser. No. 974,028

Claims priority, application France, Sep. 7, 1976, 76 26913

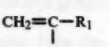
Int. Cl.[3] **C08F** *120/26, 120/36*

U.S. Cl. 526—73 **5 Claims**

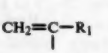
1. A polymer obtained by polymerising an allyl-acrylic monomer of the formula:



wherein R is an alkylene group having 1 to 4 carbon atoms and R_1 is selected from the group consisting of a hydrogen atom and a methyl group, wherein both the allyl CH_2=CH-CH_2 group and the acrylyl or methacrylyl group

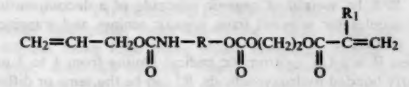


in said monomer have been polymerized and wherein polymerization occurs in a first stage at said acrylic or methacrylic group



to form a linear polymer and polymerization at the allylic group occurs in a second stage to form a three dimensional polymer.

5. A polymer obtained by polymerising an allyl-acrylic monomer of the formula:



wherein R is an alkylene group having 1 to 4 carbon atoms and R_1 is selected from the group consisting of a hydrogen atom and a methyl group wherein both the allyl CH_2=CH—CH_2 group and the acrylyl or methacrylyl group

in said monomer have been polymerized, polymerization occurs at said acrylic or methacrylic group

to form a linear polymer and polymerization at the allylic group occurs to form a three dimensional polymer, and wherein polymerization both at the allylic and the acrylic or methacrylic group occurs in the same stage.

4,241,203

ACRYLONITRILE COPOLYMERS HAVING LOW RESIDUAL MONOMER CONTENT AND METHODS FOR THEIR PREPARATION

Franz Wenzel, Darmstadt; Heinz-Dieter Bruemmer, Seeheim, Jugenheim, Fed. Rep. of Germany, and Manfred Krieg, Darmstadt-Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,210

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804533

Int. Cl.[3] **C08F** *220/14, 220/44*

U.S. Cl. 526—218 **3 Claims**

1. The method of making a copolymer of acrylonitrile having a residual monomer content of less than 50 ppm, which comprises free-radically bulk polymerizing a monomer mixture of 60 to 80 percent by weight of acrylonitrile and 40 to 20 percent by weight of methyl methacrylate to effect a conversion of at least 75 percent by weight thereof and then further heating the resulting polymer-monomer mixture to a residual monomer content of less than 50 ppm by post-heating for 4 to 12 hours at 140° C. to 170° C.

4,241,204

CATIONICALLY CURABLE ORGANIC RESIN COMPOSITIONS CONTAINING SULFONIUM SALTS AND AN ORGANIC OXIDANT

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,101

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.[3] **G03C** *1/68*

U.S. Cl. 526—333 **10 Claims**

1. Heat curable compositions comprising

(A) cationically polymerizable organic material, and

(B) an effective amount of a curing agent consisting essentially of 0.1 to 10% by weight of (A) of a dialkylhydroxyarylsulfonium salt of the formula,

$$[R(R^1)_aS]^+[Y]^-,$$

and 0.1 to 10% by weight of the heat curable composition of an organic oxidant selected from iodosoaromatic or-

ganic compounds, and organic peroxides having 0.1 to 50% by weight of organic peroxide of a decomposition accelerator selected from organic amines and transition metals,

where R is a $C_{(6-20)}$ aromatic radical having from 1 to 3 nuclearly bonded hydroxy radicals, R^1 can be the same or different $C_{(1-8)}$ alkyl radical or an alkylene radical capable of forming a cycloaliphatic or heterocyclic ring, Y is a nonnucleophilic anion, a is an integer equal to 0 or 2, and when R^1 is alkyl, a is 2, and when R^1 is alkylene, a is 1.

4,241,205

9-DEOXY-5,9α-EPOXY-4,5-CIS-17,18-TETRADEHYDRO-PGF$_1$, AMIDES

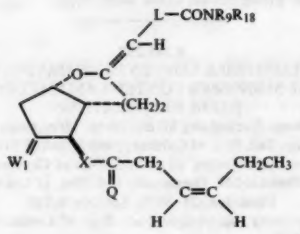
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,982, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,459

Int. Cl.^{3} C07D *311/02*

U.S. Cl. 542—420 **16 Claims**

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;

wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$, or

(2) —CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;

wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8:β—OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,241,206

KETONE SYNTHESIS BY HYDROACYLATION

John W. Suggs, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1978, Ser. No. 955,309

Int. Cl.^{3} C07C *45/61*; C09B *23/00*;

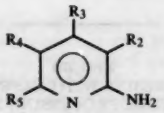
U.S. Cl. 542—424 **9 Claims**

1. A method for the production of a ketone comprising the steps of:

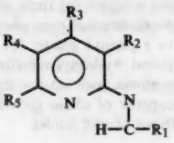
a. reacting an aldehyde of the formula:

R_1CHO,

where R_1 is alkyl or aryl, with a heterocyclic compound of the formula:



where R_2, R_3, R_4, and R_5 are selected from hydrogen, alkyl, nitro, amino and halogen when R_1 is alkyl, and R_2 is selected from alkyl, nitro, amino and halogen, and R_3, R_4, and R_5 are selected from hydrogen, alkyl, nitro, amino and halogen when R_1 is aryl, thus forming a reaction product of the formula:



b. combining this reaction product with an olefin of the formula:

R_6CHCH_2

where R_6 is alkyl or aryl, in the presence of a rhodium catalyst selected from the group consisting of rhodium oxide, rhodium halide, rhodium nitrate, rhodium carbonyl, polymers containing rhodium and

$RhX(PR_3)_3$

where X is anionic and selected from the group consisting of halide, cyanide, alkoxide, and thiolate, and R is selected from the group consisting of alkyl, aryl, alkoxy and aryloxy, and

c. hydrolyzing to form a ketone having the formula:

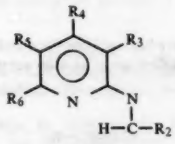
$R_6CH_2CH_2COR_1$.

2. A method for producing a 2-aminopyridylketamine comprising:

reacting an olefin of the formula:

R_1CHCH2

where R_1 is alkyl or aryl, with an imine compound of the formula:

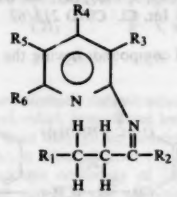


where R_2 is alkyl or aryl and R_3, R_4, R_5, and R_6 are hydrogen, alkyl, nitro, amino or halogen,

and a catalyst selected from the group consisting of rhodium oxide, rhodium halide, rhodium nitrate, rhodium carbonyl, polymers containing rhodium and

$RhX(PR_3)_3$

where X is anionic and selected from the group consisting of halide, cyanide, alkoxide, and thiolate, and R is selected from the group consisting of alkyl, aryl, alkoxy and aryloxy, to form a product with the formula:



4,241,207

ORGANONITROGEN DERIVATIVES OF 2-BENZOPYRANONE

Karl-Heinz Boltze, Bensberg-Kippekausen; Peter-Rudolf Seidel, Porz-Wahnheide; Haireddin Jacobi, Leichlingen, and Helmut Schwarz, Bensberg-Frankenforst, all of Fed. Rep. of Germany, assignors to Troponwerke Dinklage & Co., Cologne, Fed. Rep. of Germany

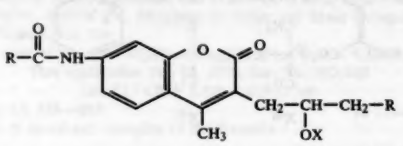
Division of Ser. No. 703,340, Jul. 8, 1976, Pat. No. 4,144,336. This application Nov. 24, 1978, Ser. No. 963,652

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530405; Oct. 2, 1975, 2543945

Int. Cl.[3] C07D *311/08, 407/14*

U.S. Cl. 542—427 39 Claims

1. A 2-benzopyranone compound of the formula



wherein

X is a 3,4,5-trimethoxybenzoyl group or a 3,4,5-trimethoxycinnamoyl group; and each

R individually is selected from the group consisting of C_1–C_6 alkylamino and C_1–C_6 dialkylamino in which one hydrogen atom may be replaced by a hydroxyl group which may in turn be esterifed with a 3,4,5-trimethoxybenzoyl or 3,4,5-trimethoxycinnamoyl group;

amino substituted once or twice by C_2–C_4 alkenyl, aralkyl of up to 10 carbon atoms, or C_4–C_7 cycloalkyl; or an N-containing heterocyclic ring which is a member of the group consisting of pyrrolidino, piperidino and hexahydroazepino and which are linked through a nitrogen atom and which heterocyclic ring may be substituted by phenyl, alkyl or hydroxyalkyl wherein the hydroxy group may be esterified by a 3,4,5-trimethoxy benzoyl or 3,4,5-trimethoxy cinnamoyl group;

or a salt of each compound with a physiologically acceptable acid.

4,241,208

PIPERIDINE DERIVATIVES

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Ohsawa, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

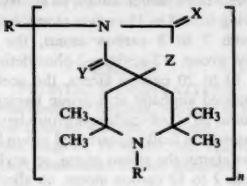
Division of Ser. No. 792,013, Apr. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 636,659, Dec. 1, 1975, abandoned, which is a continuation of Ser. No. 414,525, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 258,392, May 31, 1972, abandoned. This application Dec. 12, 1978, Ser. No. 968,677

Claims priority, application Japan, Jun. 5, 1971, 46-39630

Int. Cl.[3] C07D *471/10, 498/10*

U.S. Cl. 546—20 30 Claims

1. A compound having the formula



wherein

n is 1;

X represents an oxygen atom or a sulfur atom;

Y represents an oxygen atom, a sulfur atom or a group of the formula

in which R'' is hydrogen, methyl, allyl, 2-propynyl, 2-hydroxyethyl, 2-methoxyethyl or benzyl;

Z represents an oxygen atom or a group of the formula

in which

R''' is hydrogen, an alkyl group having from 1 to 4 carbon atoms, allyl, 2-propynyl, 2-hydroxyethyl, ethoxymethyl, 2-vinyloxyethyl, 2-phenoxyethyl, 2-acetoxyethyl, 2-benzoyloxyethyl or benzyl;

R represents an alkyl group having from 1 to 20 carbon atoms, a hydroxyalkyl group having from 2 to 3 carbon atoms, an alkenyl group having from 3 to 4 carbon atoms, the 2-propynyl group, a cyanoalkyl group having from 2 to 3 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, the 2-hydroxy-2-phenylethyl group, a 2-acyloxy-2-phenylethyl group having from 10 to 20 carbon atoms, the vinyloxyethyl group, the phenoxyethyl group, the methylthioethyl group, the 2,3-epoxypropyl group, an acyloxyalkyl group having from 4 to 14 carbon atoms, an alkoxycarbonylalkyl group having from 3 to 15 carbon atoms, an aryloxycarbonylalkyl group having from 8 to 12 carbon atoms, an aralkyl group having from 7 to 8 carbon atoms, a 2,3-epoxypropyloxycarbonylalkyl group having from 5 to 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, the cyclohexyl group, an alkoxycarbonyl group having from 2 to 9 carbon atoms, an aralkoxycarbonyl group having from 8 to 9 carbon atoms, a dialkoxyphosphine group having from 2 to 16

carbon atoms, the diphenoxyphosphine group, a group of the formula

in which R"" is an alkyl group having from 1 to 8 carbon atoms or a phenyl group; and

R' represents an alkyl group having from 1 to 20 carbon atoms, a hydroxyalkyl group having from 2 to 3 carbon atoms, an alkenyl group having from 3 to 4 carbon atoms, the 2-propynyl group, a cyanoalkyl group having from 2 to 3 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, vinyloxyethyl, phenoxyethyl, methylthioethyl, the 2,3-epoxypropyl group, an acyloxyalkyl group having from 3 to 14 carbon atoms, an alkoxycarbonylalkyl group having from 3 to 15 carbon atoms, an aralkyl group having from 7 to 8 carbon atoms, the 2-hydroxy-2-phenylethyl group, a 2-acyloxy-2-phenylethyl group having from 10 to 20 carbon atoms, the acetyl group, an α,β-unsaturated aliphatic acyl group having from 3 to 9 carbon atoms, an alkoxycarbonyl group having from 2 to 9 carbon atoms, an aralkoxycarbonyl group having from 8 to 9 carbon atoms, the amino group, an acyl amino group having from 2 to 12 carbon atoms, an alkylamino group having from 1 to 2 carbon atoms, or the nitroso group,

wherein all acyl groups are carboxyl derived acyl groups.

5. The compound of claim 1 wherein

X is oxygen;

Y is >N—R" wherein R" is methyl, 2-hydroxyethyl, 2-methoxyethyl, benzyl, allyl or 2-propynyl, and

Z is >N—R"' wherein R"' is 2-propynyl, 2-hydroxyethyl, ethoxymethyl, 2-vinyloxyethyl, 2-phenoxyethyl, 2-acetoxyethyl, 2-benzoyloxyethyl or benzyl.

4,241,209

CHEMICAL AGENTS

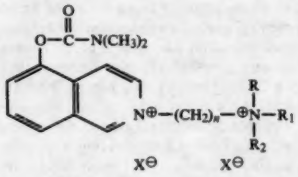
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1967, Ser. No. 682,721

Int. Cl.³ C07D *217/00*

U.S. Cl. 546—147 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anion, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, tetraphenylboronate, and hydrogen sulfate, wherein n is selected from 5–16, and wherein R, R_1, R_2 are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl.

4,241,210

CHEMICAL AGENTS

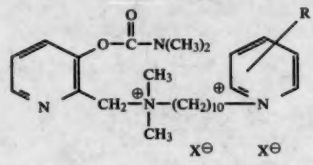
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 9, 1967, Ser. No. 674,385

Int. Cl.³ C07D *213/62*

U.S. Cl. 546—261 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anions and wherein R is a meta, ortho, or para substituent selected from the group consisting of hydrogen, hydroxyl, methyl, and aldoximino, said monovalent and polyvalent anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate.

4,241,211

CHEMICAL AGENTS

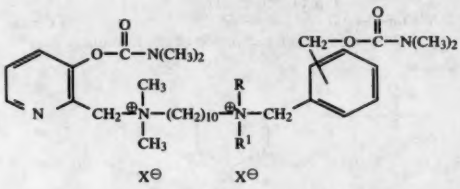
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1967, Ser. No. 682,722

Int. Cl.³ C07D *213/62*

U.S. Cl. 546—261 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate; R and R' are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl; and the dimethylcarbamoxymethyl group is in the position selected from ortho, meta, and para of the phenyl ring.

4,241,212

CHEMICAL AGENTS

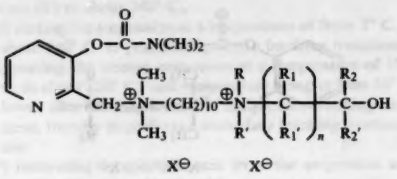
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1967, Ser. No. 673,248

Int. Cl.³ C07D *213/63*

U.S. Cl. 546—291 **2 Claims**

1. New chemical compounds having the generic formula:



wherein R and R′ are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, and hydroxyethyl; R_1 and R_1' are selected from the group consisting of hydrogen, methyl, and ethyl; n is selected from 1–8; R_2 and R_2' are selected from the groups consisting of hydroxyl, hydrogen, methyl, and propyl; and X is one equivalent of an anion selected monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate.

4,241,213

PROCESS FOR PRODUCING 2-CHLORO-5-TRICHLOROMETHYL PYRIDINE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Kusatsu; Isao Yokomichi, Moriyama; Rikuo Nasu; Takao Awazu, both of Kyoto, and Junichi Kawashima, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Limited, Osaka, Japan

Filed Sep. 13, 1979, Ser. No. 75,022
Claims priority, application Japan, Sep. 22, 1978, 53/115820
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—345 **6 Claims**

1. In a process for producing 2-chloro-5-trichloromethyl pyridine by reacting β-picoline with chlorine, an improvement characterized by reacting β-picoline with chlorine in a gaseous phase at 300° to 500° C. in the presence of an inert diluent selected from the group consisting of nitrogen, halogenated methanes, halogenated ethanes, halogenated ethylenes and mixtures thereof.

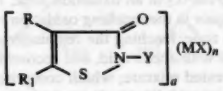
4,241,214

METAL SALT COMPLEXES OF 3-ISOTHIAZOLONES

George A. Miller, Glenside, and Ernest D. Weiler, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 142,775, May 12, 1971, Pat. No. 4,150,026. This application Jul. 12, 1978, Ser. No. 923,845
Int. Cl.³ C07F *1/08, 3/00, 15/00*
U.S. Cl. 548—101 **10 Claims**

1. A metal salt complex of the formula



wherein

Y is a substituted alkyl group of 1–18 carbon atoms selected from hydroxyalkyl, haloalkyl, cyanoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, carboxyalkyl, carbalkoxyalkyl, alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, haloalkoxyalkyl, carbamoxyalkyl, isothiazolonyalkyl and cycloalkylaminoalkyl, an unsubstituted or substituted aryl group of up to 10 carbon atoms wherein the substituent is selected from halogen, cyano, nitro, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, $(C_1–C_4)$ alkylacylamino, $(C_1–C_4)$ carbalkoxy, and sulfamyl, an unsubstituted or halo-substituted alkenyl, alkynyl group having 2–18 carbon atoms, unsubstituted or substituted cycloalkyl having 3–12 carbon atoms and in which the substituent is selected from halogen and methyl, an unsubstituted or substituted aralkyl having up to 10 carbon atoms, in which the substituent is selected from halogen, nitro, $(C_1–C_4)$ alkyl, and $(C_1–C_4)$ alkoxy;

R is hydrogen, halogen or a $(C_1–C_4)$ alkyl group;

R^1 is hydrogen, halogen, or a $(C_1–C_4)$ alkyl group; or R and R′ can be taken together to complete a benzene ring, optionally substituted with one or more halogen atoms, nitro groups, $(C_1–C_4)$ alkyl groups, cyano groups, or $(C_1–C_4)$ alkoxy groups;

M is a cation of barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, nickel, silver, sodium, strontium, tin, or zinc;

X is a chloride, bromide, iodide, sulfate, nitrate, acetate, perchlorate, bisulfate, bicarbonate, oxalate, maleate, p-toluenesulfonate, carbonate, or phosphate anion;

a is the integer 1 or 2; and

n is the integer for which the anion X satisfies the valence of the cation M.

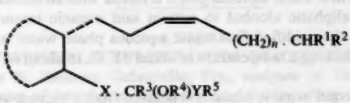
4,241,215

PROSTANE DERIVATIVES

Jean Bowler, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

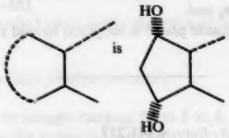
Filed Aug. 11, 1976, Ser. No. 713,505
Claims priority, application United Kingdom, Aug. 22, 1975, 34969/75
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—55 **9 Claims**

1. A prostane derivative of the formula:



I

wherein



R^1 is carboxy or C_{2-12} alkoxycarbonyl, R^2, R^3 and R^4, which may be the same or different, are each hydrogen or C_{1-5} alkyl, X is ethylene or transvinylene, Y is C_{1-5} alkyleneoxy, wherein the oxygen is bonded to R^5, or a direct bond, R^5 is phenyl or naphthyl which is unsubstituted or is substituted by one or more substituents selected from halogen, nitro, and C_{1-5}-alkyl, alkoxy and halogenalkyl, and n is 1 to 4, and for those compounds wherein R^1 is carboxy, the pharmaceutically or veterinarily acceptable salts thereof.

4,241,216

PHTHALIC ACID DIESTER PREPARATION WITH WASTE STREAM PURIFICATION AND RECYCLE

Lee H. Bergman, Baton Rouge, La.; John J. Evangelista, New Boston, Mich., and William M. Herring, Hackettstown, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 6
Int. Cl.³ C07C *67/08*
U.S. Cl. 560—99 **16 Claims**

1. In a continuous process for the esterification of phthalic acid or anhydride with at least one saturated aliphatic alcohol containing about 4 to about 10 carbon atoms, esterification

being carried out with recycling of said alcohol used in a stoichiometric excess in the presence or absence of esterification catalysts wherein said esterification results from continuously feeding said phthalic acid or anhydride, said saturated alcohol, and an organic by-product of said process derived from the extraction of the waste water product of said process with an alcohol wherein said alcohol used for the extraction is the same as that used to form said phthalic ester and said esterification is conducted in a reactor stage by reacting said acid or anhydride with said aliphatic alcohol until a level of acid to ester conversion of at least 90 percent is reached, and wherein the water of esterification is removing from the reaction and condensed in a heat exchanger together with a portion of the alcohol used to esterify and the alcohol returned to the process for use in extraction of waste water produced in the process, and wherein neutralization is effected in a neutralizing stage of the resulting diester product also containing, as organic impurities, monoester, unreacted phthalic acid and said aliphatic alcohol, and other impurities with an aqueous alkali solution at a temperature of about 80° C. to 100° C., and thereafter forming a first organic phase and a first waste aqueous phase, and wherein said organic phase is separated by decanting and thereafter purified by steam stripping and carbon treatment to produce the desired diester product, the improvement wherein process waste water and said organic by-product of said process is purified and said by-product is recycled to said reactor stage without imparting color to said diester product by the following steps wherein

(a) said first waste aqueous phase is filtered to remove solids and passed through activated carbon to remove color bodies, and thereafter

(b) said first waste aqueous phase is mixed with an amount of said aliphatic alcohol to extract said organic impurities from the acidified first waste aqueous phase water while maintaining a temperature of about 35° C. to about 65° C., and

(c) a second organic phase is separated from a second waste aqueous phase by decantation,

(d) said second organic phase is washed and

(e) a third waste aqueous phase is separated from a third organic phase, and

(f) said third organic phase is recycled to said reactor stage.

4,241,217

ANTIOXIDANT COMBINATION OF ESTERS AND AMINES

Joseph A. Kuczkowski, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 668,567, Mar. 19, 1976, Pat. No. 4,125,515. This application May 26, 1978, Ser. No. 909,746

Int. Cl.³ C07C *149/20*

U.S. Cl. 560—152 **1 Claim**

1. 3,6,9-trioxaundecane-1,11-bis(3-n-dodecylthiopropionate).

4,241,218

CHEMICAL AGENTS

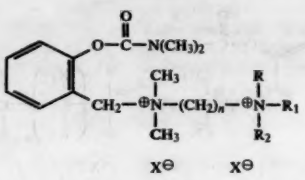
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1967, Ser. No. 687,394

Int. Cl.³ C07C *125/06*

U.S. Cl. 560—163 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the groups of anions consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, hydrogen sulfate, and tetraphenylboronate, wherein n is selected from 5–16, and wherein R, R_1, R_2 are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl and butyl.

4,241,219

TREATMENT OF CARBONYLATION EFFLUENT

Chee-Gen Wan, North Brunswick, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,712

Int. Cl.³ C07C *51/12*

U.S. Cl. 560—232 **5 Claims**

1. A process for the recovery of halogen values from an effluent gas stream obtained in the carbonylation of methyl acetate and/or methyl ether in the presence of a Group VIII metal and a halogen moiety which comprises bringing said gas stream into counter-current contact in a scrubbing zone with at least one of the products of the carbonylation reaction having a boiling point above 100° C.

4,241,220

PROCESS FOR PRODUCING TEREPHTHALIC ACID

Shikiho Itaya, Ohtake; Takenori Nagaoka; Teruo Itoh, both of Iwakuni; Yukimasa Shigemura, Ohtake, and Shigemi Shiraki, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,944

Claims priority, application Japan, Dec. 28, 1977, 52-157225; Dec. 28, 1977, 52-157226; Dec. 28, 1977, 52-157227

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—414 **14 Claims**

1. A process for producing terephthalic acid by oxidizing p-xylene with a molecular oxygen-containing gas in an acetic acid solvent in the presence of a catalyst containing a cobalt compound, a manganese compound and a bromine compound at a temperature of at least about 160° C. and a pressure of at least about 5 $kg/cm^2.G$ in an oxidation zone, recycling a part of the mother liquor in the resulting oxidation reaction mixture to the oxidation zone, leaching the remainder of the oxidation reaction mixture with acetic acid, and recovering terephthalic acid from the treated mixture; which comprises

(A) performing said liquid-phase catalytic oxidation at a temperature (T) within the range of about 170° C. to about 230° C. to form an oxidation mixture containing crude terephthalic acid having a 4-carboxybenzaldehyde content of 500 to 3,000 ppm and an optical density, measured at 340 mμ, of not more than 0.3,

(B) separating about 60 to about 98% by weight of the total mother liquor from the resulting oxidation reaction mixture at a temperature of from (T−30)° C. to (T+10)° C., and recycling the separated mother liquor to the oxidation zone,

(C) adding hot acetic acid to the remainder of the oxidation reaction mixture so that the weight ratio of acetic acid to crude terephthalic acid in the mixture is 2:1 to 10:1 to form a suspension of the crude terephthalic acid in acetic acid

kept at a temperature ranging from the reaction temperature (T) to about 240° C.,

(D) stirring the suspension at a temperature of from T° C. to about 240° C. to perform a primary leaching treatment,

(E) stirring the treated suspension at a temperature of 150° C. to about 220° C., said temperature being at least 10° C. lower than the temperature of the primary leaching treatment, thereby to perform a secondary leaching treatment, and

(F) recovering terephthalic acid from the suspension subjected to the secondary leaching treatment.

4,241,221
NOVEL 11-DEOXY-SUBSTITUTED PROSTAGLANDINS OF THE E AND F SERIES

Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

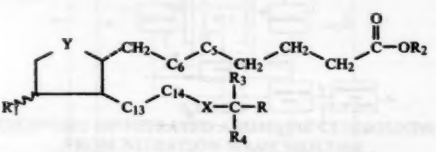
Continuation of Ser. No. 552,403, Feb. 24, 1977, Pat. No. 4,057,571, which is a continuation-in-part of Ser. No. 274,559, Jul. 24, 1972, Pat. No. 4,141,914. This application Mar. 10, 1977, Ser. No. 776,444

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

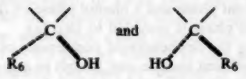
Int. Cl.³ C07C *177/00*

U.S. Cl. 562—470 **13 Claims**

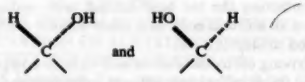
1. A compound selected from the group consisting of an optically active compound of the formula



and a racemic compound of that formula and the mirror image thereof wherein R is phenyl, phenoxy or phenoxy substituted with one or more groups selected from the group consisting of lower alkyl, lower alkoxy, nitro, halo and trifluoromethyl; R_1 is selected from the group consisting of lower alkyl and lower 1-alkenyl; R_2 is selected from the group consisting of hydrogen and an alkyl group having from 1 to 12 carbon atoms; R_3 and R_4 are hydrogen; X is a divalent moiety selected from the group consisting of those of the formula



wherein R_6 is selected from the group consisting of hydrogen and lower alkyl; Y is a divalent moiety selected from the group consisting of those of the formula



the moiety $-C_5-C_6-$ is ethylene or cis vinylene and the moiety $-C_{13}-C_{14}-$ is ethylene or trans vinylene with the proviso that when $-C_5-C_6-$ is cis-vinylene then $-C_{13}-C_{14}-$ must be trans-vinylene; and the non-toxic, cationic salts thereof when R_2 is hydrogen.

4,241,222
PROCESS FOR THE PREPARATION OF CUMYL PEROXIDES

Ronald E. MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,355

Int. Cl.³ C07C *179/06*

U.S. Cl. 568—561 **6 Claims**

1. A process for preparing cumyl peroxides comprising reacting in a temperature range of 10°–50° C. an aliphatic or cycloaliphatic hydroperoxide or aliphatic dihydroperoxide selected from the group consisting of t-butyl hydroperoxide, t-amyl hydroperoxide, t-hexyl hydroperoxide, 1,1,3,3-tetramethylbutyl hydroperoxide, cumene hydroperoxide, cymene hydroperoxide, p-menthane hydroperoxide, 1-methylcyclohexyl hydroperoxide, 1-methylcyclopentyl hydroperoxide, 3-hydroperoxy-3-methylbutyne-1, 2-hydroperoxy-2-methyl-4-hydroxypentane, 1-hydroperoxycyclohexylacetylene, 2,5-dimethyl-2,5-dihydroperoxyhexane, 2,7-dimethyl-2, 7-dihydroperoxyoctane, 2,5-dimethyl-2,5-dihydroperoxyhexyne-3 and diisopropylbenzene dihydroperoxide with an olefin selected from alpha-methylstyrene or a substituted alpha-methylstyrene wherein the substituent is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, t-butyl, amyl, t-amyl, hexyl, chloro, bromo, fluoro, methoxy, ethoxy, propoxy, isopropoxy, phenoxy, phenyl and naphthyl, and a t-cumyl halide corresponding to the hydrohalogenated olefin in the presence of a catalyst selected from the group consisting of phenol, ortho, meta, and paracresols, chlorophenols, bromophenols, methoxyphenols, ethylphenols, isopropylphenols, para-t-butylphenol, paraphenylphenol, 3,4-dichlorophenol, 3,4-dimethylphenol, alpha-naphthol and beta-naphthol under substantially anhydrous conditions.

4,241,223
F-PHENYLALKYLENE OXIDE DIACETYLENES

Keith B. Baucom, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1979, Ser. No. 70,473

Int. Cl.³ C07C *43/166*

U.S. Cl. 568—611 **3 Claims**

1. A F-phenylalkylene oxide diacetylene having the following formula:

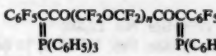
$$C_6F_5C{=}C(CF_2OCF_2)_nC{=}CC_6F_5''$$

wherein n is an integer ranging from 3 to 8, inclusive.

3. A process for preparing a F-phenylalkylene oxide diacetylene which comprises the following steps:

(a) reacting an equimolar mixture of butyllithium and a F-phenyl phosphonium salt having the formula $C_6F_5CH_2P(C_6H_5)Br$ within an inert atmosphere at about room temperature for a period of about 0.5 to 3 hours to obtain a product having the formula $C_6F_5CH{=}P(C_6H_5)_3$;

(b) reacting the product obtained in step (a) with acid chloride $ClCO(CF_2OCF_2)_nCOCl$ (in which n is an integer ranging from 3 to 8 inclusive) in a 4 to 1 mole ratio within an inert atmosphere at about room temperature for about 0.5 to 2 hours to obtain a keto-ylid having the formula:



(in which n is an integer from 3 to 8 inclusive); and

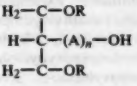
(c) having the keto-ylid under a vacuum, at a temperature ranging from about 100° to 300° C. for a period of about 6 to 12 hours, thereby obtaining a F-phenylalkylene oxide diacetylene having the formula $C_6F_5C{=}C(CF_2OCF_2)_nC{=}CC_6F_5$ (in which n is an integer from 3 to 8 inclusive).

4,241,224
FIBER LUBRICANTS DERIVED FROM THE OXYALKYLATION OF A GLYCEROL-1,3-DIALKYLETHER

David D. Newkirk, and Robert B. Login, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 956,052, Oct. 30, 1978. This application Oct. 9, 1979, Ser. No. 82,792
Int. Cl.³ C07C *43/11*
U.S. Cl. 568—619 2 Claims

1. The process of preparing a fiber lubricating compound having the structural formula:



wherein R is an alkyl radical having about 3 to about 22 carbon atoms; A is a mixture of the residues of ethylene oxide and another lower alkylene oxide; n has a value to produce a molecular weight of about 300 to about 3000; and said compound is the oxyalkylation product of a glycerol-1,3-dialkylether comprising

a. reacting a fatty alcohol having 3 to about 22 carbon atoms with epihalohydrin catalyzed with a Lewis acid catalyst followed by treatment with a base to form an alkoxyglycidyl ether,

b. reacting said alkoxyglycidyl ether with an excess of a fatty alcohol having 3 to about 22 carbon atoms, wherein said alcohol can be the same or different than said alcohol in part (a), in the presence of a Lewis acid catalyst,

c. recovering the gycerol-1,3-dialkylether intermediate produced, and

d. alkoxylating said intermediate with ethylene oxide and another alkylene oxide under alkaline catalysis at a temperature of about 110° to 135° C.

4,241,225
PREPARATION AND DEHYDROGENATION OF CYCLOALKANOL DERIVATIVES

Keith Gladwin, Chesterfield, England, assignor to Coalite and Chemical Products Limited, North Chesterfield, England

Filed Jun. 6, 1978, Ser. No. 913,127
Claims priority, application United Kingdom, Jun. 8, 1977, 23926/77
Int. Cl.³ C07C *179/02*
U.S. Cl. 568—652 5 Claims

1. A method of preparing 2-isopropoxy cyclohexanol, comprising: reacting a stoichiometric excess of isopropyl alcohol with cyclohexene oxide, in the presence of a catalytically effective amount of acidified Fuller's earth until 2-isopropoxy cyclohexanol is formed, and then recovering the 2-isopropoxy cyclohexanol from the reaction mixture.

4,241,226
PREPARATION OF 2-NITRO-2-METHYL-1-PROPANOL

Guy Adrian, Lille; Marcel-Xavier Sion, Lewarde, and Andre Benattar, Lille, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Feb. 15, 1979, Ser. No. 12,440
Claims priority, application France, Feb. 15, 1978, 78 04210
Int. Cl.³ C07C *79/18*
U.S. Cl. 568—704 4 Claims

1. A process for the direct preparation of crystalline 2-nitro-2-methyl-1-propanol with a purity of at least 95%, by condensing 2-nitropropane with formaldehyde in a molar ratio of 0.9–1.1:1, consisting essentially of the steps of:

adding less than half of the formaldehyde, in liquid form, to the 2-nitropropane and then adding 1 to 10 milliequivalents per mole of 2-nitropropane of an inorganic basic catalyst, water being present as the sole solvent in the amount of 1.5 to 10% of the totality of the reaction mass, after said additions;

after said adding steps, progessively further adding with agitation the remainder of the formaldehyde in solid form of polyoxymethylene, maintaining the temperature between 40° and 58° C. and the pH between 7 and 11;

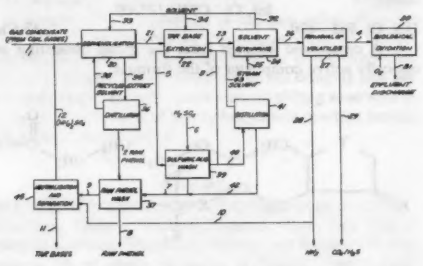
neutralizing the formed reaction product at a temperature of about 55° C. with stearic acid up to a pH between 4 and 5; and

cooling or agitating with entrainment, with a current of inert gas, of water and volatile impurities of the raw reaction medium.

4,241,227
PROCESS FOR REDUCING BIOLOGICAL OXYGEN DEMAND OF GAS CONDENSATE

Paul Wiesner, Oberursel; Fritz Wöhler, Frankfurt am Main, and Hans-Martin Stönner, Schwalbach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1976, Ser. No. 705,111
Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2619805
Int. Cl.³ C07C *37/70*
U.S. Cl. 568—761 8 Claims



1. A process for treating a gas condensate from the destructive distillation of coal containing tar bases, extractable phenol and volatile compounds including ammonia and acid gases selected from the group which consists of CO_2, H_2S and HCN, which comprises the steps of

(a) extracting said gas condensate with an organic solvent selected from the group of diisopropyl ether and methylisobutylketone to form a phenol-containing extract and a dephenolated gas condensate;

(b) separating the phenol-containing extract from step (a) into a solvent phase and a phenol phase by distillation and the solvent phase is recycled to step (a);

(c) extracting the dephenolated condensate of step (a) with the same solvent used in step (a) but in a greater quantity to remove tar bases from the dephenolated gas condensate and form a tar base extract and a gas condensate free from tar base;

(d) chemically treating the tar base extract from step (c) and separating it into another solvent phase and a tar phase by contacting the tar base extract with sodium hydroxide and/or sulfuric acid, said other solvent phase being recycled to step (c); and

(e) driving off by distillation said volatile compounds including traces of organic solvent, ammonia and acid gases of the group of CO_2, H_2S, HCN, whereby said organic solvent, ammonia and said acid gases are recovered separately from said gas condensate free from tar base from step (c) to produce a decontaminated gas condensate of low biological oxygen demand suitable for biological oxidation treatment.

4,241,228

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE SECONDARY ALKANOLS, ALKANONES, CYCLOALKANOLS AND CYCLOALKANONES, ORGANOLEPTIC USES THEREOF IN PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND PROCESS FOR PRODUCING SAME

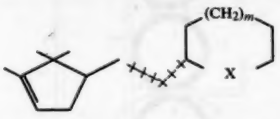
Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,173,585. This application Mar. 22, 1979, Ser. No. 23,322

Int. Cl.³ C07C *35/21*

U.S. Cl. 568—816 **3 Claims**

1. A compound having the structure:



wherein m is 0 or 1; wherein one of the lines ++++ is a carbon-carbon single bond and the other of the lines ++++ is a carbon-carbon double bond and wherein X is carbinol having the structure:

4,241,229

RECOVERY OF NITRATED AROMATIC COMPOUNDS FROM NITRATION WASH LIQUORS

Verner Alexanderson, Sharon, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 64,674

Int. Cl.³ C07C *79/10*

U.S. Cl. 568—939 **10 Claims**

1. In a process for the mononitration of an aromatic hdyrocarbon with a mixed acid comprising nitric and sulfuric acid, wherein the resulting aqueous, spent-acid phase is separated from the nitroaromatic compound phase produced thereby, and wherein the nitroaromatic compound phase is washed with an aqueous solution of ammonia or an alkali to produce thereby an alkaline wash layer containing by-products as water-soluble ammonium, or alkali metal salts and nitroaromatic compound, the improvement which comprises: contacting said alkaline wash layer which contains said by-products, with from 0.05 to 0.5 part by volume of said aromatic compound being nitrated per part by volume of wash layer to extract said nitroaromatic compound therefrom, and recycling the resulting aromatic solution of nitroaromatic compound to a nitration reaction.

4,241,230

CONTROL SYSTEM FOR THE SELECTIVE HYDROGENATION OF ACETYLENE PRESENT IN ETHYLENE PRODUCT STREAMS

B. M. Drinkard, Beaumont, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,825

Int. Cl.³ C07C *5/03, 5/08*

U.S. Cl. 585—259 **18 Claims**

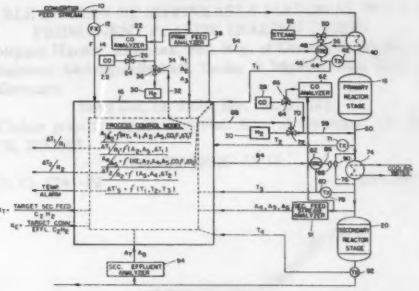
1. A method of operating an acetylene converter for an ethylene plant by hydrogenating the acetylene in a two-stage reactor, having primary and secondary stages, each having therein a hydrogenation catalyst, comprising:

(a) substantially optimizing the operation of the secondary stage of the reactor to produce a relatively low concentration of acetylene in its output effluent by maintaining the concentration of acetylene in the feed stream to the secondary stage substantially constant; and

(b) operating the primary stage of the reactor to provide an output effluent having a substantially constant acetylene content, which is then directed as an input to the secondary stage of the reactor.

13. A system for operating an acetylene converter for an ethylene plant in which excessive acetylene in the ethylene plant output is hydrogenated to ethylene, comprising:

(a) a primary reactor stage, having therein a hydrogenation catalyst, for partially hydrogenating acetylene in the ethylene plant output to ethylene;



(b) a secondary reactor stage, coupled to receive the effluent from the primary reactor stage, for substantially completing the hydrogenation of acetylene to bring the acetylene concentration in the stream to within process specifications;

(c) a control means for the primary reactor stage for operating the primary reactor stage in a manner to maintain the concentration of acetylene in its effluent stream relatively constant; and

(d) a control means for the secondary reactor stage for substantially optimizing the operation of the secondary reactor stage on its feed stream having said relatively constant concentration of acetylene to produce a relatively low concentration of acetylene in the output effluent of the secondary reactor stage.

4,241,231

ISOMERIZATION PROCESS FOR UPGRADING LOW-OCTANE LIGHT PARAFFINIC FEEDS USING A CHLORIDED PLATINUM-ALUMINA-RHENIUM CATALYST

Kirk R. Gibson, El Cerrito; Robert L. Jacobson, Hercules, and Manfred J. Michlmayr, Orinda, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 2, 1978, Ser. No. 947,792

Int. Cl.² C07C *5/28*

U.S. Cl. 585—748 **10 Claims**

1. A process for increasing the octane number of an isomerizable light paraffinic hydrocarbon feed containing, calculated as sulfur, less than about 5 ppmw of sulfur-containing impurities, which comprises:

(I) contacting in a reaction zone a porous alumina-based catalytic composite with a mixture of said feed, hydrogen gas and at least one chloride source selected from the group consisting of hydrogen chloride, chlorine gas, phosgene and chlorinated hydrocarbons which liberate hydrogen chloride at said contacting, said contacting being under isomerizing conditions, including (1) a temperature

in the range of from about 350° to 420° C., (2) a hydrogen partial pressure in the range of from about 25 to 500 psia, (3) a liquid hourly space velocity, V/V/Hr, in the range of from about 0.5 to 5, (4) a hydrogen-to-feed mol ratio in the range of from about 2 to 10, and (5) a feed-to-chloride mol ratio in the range of from about 1.0×10^3 to 1.0×10^5; said composite, based by weight upon alumina and calculated as the element, containing an amount of chloride in the range of from about 1 to 3.0 weight percent, and an amount each of platinum and rhenium in the range of from about 0.1 to 1 weight percent;

(II) separating the mixture resulting from step (1) in a liquid-gas separation zone into (1) a gaseous fraction comprising mainly hydrogen gas, hydrogen chloride and a minor amount of normally gaseous hydrocarbons, and (2) a first liquid hydrocarbon fraction;

(III) withdrawing said gaseous fraction from said separation zone and passing at least a portion thereof in recycle to said reaction zone;

(IV) fractionally distilling said separated first liquid fraction into a second liquid fraction and a normally gaseous hydrocarbon fraction, said second liquid fraction, relative to said feed, having an improved octane number.

4,241,232

WELDED INTEGRAL TUBE WALL FOR ELECTRIC STEEL-SMELTING FURNACE

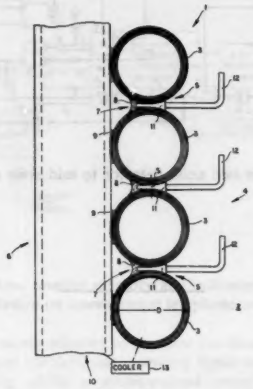
Winfried Gelsing, Essen, Fed. Rep. of Germany, assignor to Oschatz GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,338

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808686

Int. Cl.³ F27D *1/12*

U.S. Cl. 13—32 10 Claims



1. A wall for forming the heating chamber of a furnace, said wall comprising:

a plurality of generally parallel tubes each closely but spacedly juxtaposed with at least one adjacent tube of said plurality and forming therewith an outer groove open away from said chamber and an inner groove open toward said chamber;

lining anchors each having an inner end spaced toward said chamber from said tubes and an outer end wedged between two respective tubes and extending outwardly into the respective outer groove;

respective deposit welds extending the full length of and substantially filling at least the bases of said outer grooves and each forming a gastight connection between the respective tubes, said outer ends being embedded in said welds; and

means for circulating a coolant through said tubes.

4,241,233

METHOD OF FORMING DIELECTRIC MATERIAL FOR ELECTRICAL CABLE AND RESULTING STRUCTURE

George Bahder, Edison, N.J., and Mario Rabinowitz, Menlo Park, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

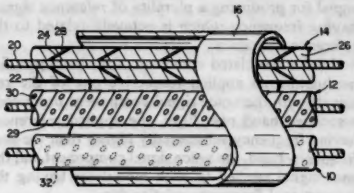
Filed Jul. 26, 1978, Ser. No. 928,269

Int. Cl.³ H01B *3/16, 9/04, 12/00*

U.S. Cl. 174—15 C 11 Claims

1. The method of forming a solid dielectric material between conductors of a coaxial cable, comprising the steps of:

filling the space between conductors with a dielectric material in fluid form, and lowering the temperature of said dielectric material below the solidification point of said



material with a temperature gradient whereby said fluid solidifies outwardly.

4,241,234

CABLE FITTING OF SHRINKABLE MATERIAL WITH A PERMANENT PLASTIC SEALING INSERT

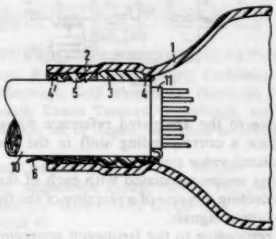
Wolfgang Haeder, Eichenau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 57,122

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832485

Int. Cl.³ H02G *15/18*

U.S. Cl. 174—92 10 Claims



1. In a cable fitting consisting of a material which is shrinkable under the influence of heat, said cable fitting having at least one sealing area provided with sealing means comprising an adhesive agent influenced by heat the improvement comprising said sealing means being a permanent plastic sealing member being disposed between two adhesive layers.

4,241,235

VOICE MODIFICATION SYSTEM

Neil R. McCanney, Norwalk, Conn., assignor to Reflectone, Inc., Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 26,593

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SH 9 Claims

1. Apparatus for modifying an applied voice signal to produce any one of a plurality of modified voice sounds, each of which has a unique understandable voice sound different from that which would result from the applied voice signal, comprising:

a plurality of band pass filters having mutually exclusive, collectively exhaustive, octavely related pass bands, each band pass filter being responsive to the applied voice signal for producing a respective one of a plurality of voice signal components having mutually exclusive, collectively exhaustive, octavely related frequency bands;

a frequency generator for producing a plurality of output signals having geometrically related frequencies all of which are higher than the highest frequency passed by the

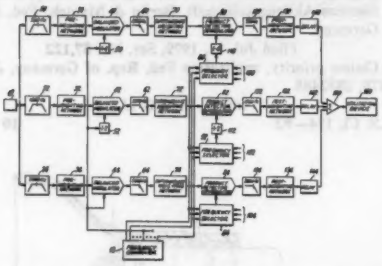
band pass filters, one of which is a basic reference frequency;

means responsive to the basic reference frequency output signal for producing a plurality of reference signals, each having frequency which is octavely related to the basic reference frequency;

a modulator associated with each of the band pass filters for modulating an applied respective one of the reference signals with the voice signal component produced by the associated band pass filter, the applied reference signal having frequency substantially higher than the associated frequency band, the voice signal component and the reference signal applied to each modulator having the same proportional frequency relationship;

a low pass filter associated with each of the modulators for substantially attenuating the upper sideband of the voice modulated signal component produced by that modulator;

a demodulator associated with each of the low pass filters for demodulating the filtered voice modulated signal component produced by the associated filter with an applied demodulating signal having frequency which is shifted



relative to the associated reference signal frequency to produce a corresponding shift in the frequency of the associated voice signal component;

switching means associated with each of the demodulators for selecting any one of a plurality of the frequency generator output signals;

means responsive to the frequency generator output signal selected by each of the switching means for producing an output signal having the same octave frequency relationship to the associated switching means output signal as the associated reference frequency has to the basic reference frequency and for applying that output signal to the associated demodulator as the applied demodulating signal;

a low pass filter associated with each of the demodulators for substantially attenuating the components of the demodulator output signal having frequency higher than the base band component of the demodulator output signal;

a signal combining network for combining the demodulated voice signal components to produce a modified voice signal; and

an audio transducer for rendering the modified voice signal audible.

4,241,236

NOISE RANGE INDICATING SYSTEM

Donald H. Nash, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1978, Ser. No. 957,297

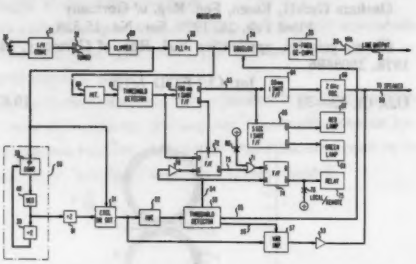
Int. Cl.³ H04B 9/00

U.S. Cl. 179—2 EA **10 Claims**

1. A wireless audio transmission system for use within an enclosed space and including a portable wireless transmitter, a stationary receiver, and a loudspeaker, characterized by:

a noise detector in said receiver for detecting the noise level in signals transmitted from said transmitter to said receiver, and

a noise enhancement circuit for applying at least a portion of said noise to said loudspeaker wherein said noise is sup-



plied from said noise detector to said noise enhancement circuit.

4,241,237

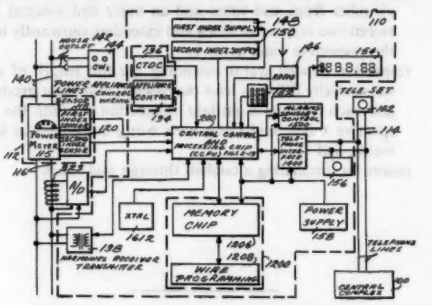
APPARATUS AND METHOD FOR REMOTE SENSOR MONITORING, METERING AND CONTROL

Theodoros G. Paraskevakos, Palm Bay, and W. Thomas Bushman, Melbourne, both of Fla., assignors to Metretek Incorporated, Melbourne, Fla.

Filed Jan. 26, 1979, Ser. No. 6,871

Int. Cl.³ H04M 11/04

U.S. Cl. 179—2 AM **43 Claims**



1. A method for remote monitoring of sensors adapted for automatic communication with a central complex through a telephone line, said central complex having a telephone number assigned thereto, comprising the steps of:

selectively seizing said telephone line at a predetermined real time;

generating signals onto said telephone line representative of said central complex telephone number to address said central complex;

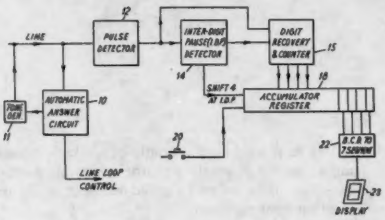
generating, responsive to acknowledgement signals from said central complex, coded signals indicative of the identity of said sensors, and data indicative of the states of said sensors; and

receiving and storing subsequent signals from said central complex indicative of the time of the next scheduled seizure of said telephone line.

4,241,238
TELEPHONE NUMBER MEMORY AND INDICATOR SYSTEM

Thomas J. Strand, Crowborough, England, assignor to Feedback Limited, Sussex, England

Filed Apr. 4, 1979, Ser. No. 26,966
Claims priority, application United Kingdom, Apr. 20, 1978, 15686/78
Int. Cl.³ H04M *15/06*
U.S. Cl. 179—5.5 **23 Claims**



1. A telephone number memory and indicator system suitable for installation on conventional telephone networks comprising:

answering means adapted to measure the duration of each input signal for detecting a ringing signal having a duration falling within a predetermined period as received from the exchange in response to a calling party and for intercepting a call after a predetermined number of ringing signals have been detected to allow the exchange to determine that the call has been intercepted;

generator means for generating a proceed signal in response to the output of said answering means for transmitting to the calling party's line that the system is ready to receive incoming data;

detector means for detecting incoming telephone number data received from the calling party's telephone line after the call has been intercepted;

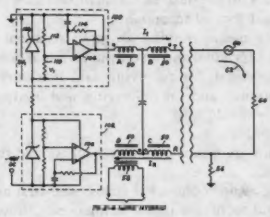
electronic storage means for storing the detected data from said detector means; and

indicator means capable of providing a display indicative of at least a portion of the data present in said storage means.

4,241,239
FLUXBUCKING LINE TRANSFORMER WITH ELECTRONIC EQUIVALENT LINE TERMINATING IMPEDANCE

Joseph Pernyeszi, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 881,085
Int. Cl.³ H01F *19/02, 27/38;* H04Q *1/28;* H04M *1/74*
U.S. Cl. 179—70 **4 Claims**



4. In a telephone line circuit having a tip line, a ring line, a source of DC voltage and a line transformer for coupling speech signals modulated on said DC voltage from the primary to the secondary of said line transformer, the improvement comprising:

a first primary winding coupled to the tip line and a second primary winding coupled to the ring line of said line transformer such that a first DC current flows in said first primary winding and a second DC current flows in said second primary winding;

first and second fluxbucking windings coupled respectively to said first and second primary windings for substantially cancelling the DC flux produced in the core of said transformer by said first and second DC currents;

secondary winding means for coupling said signal modulated on said direct current from the primary windings to the secondary of said line transformer;

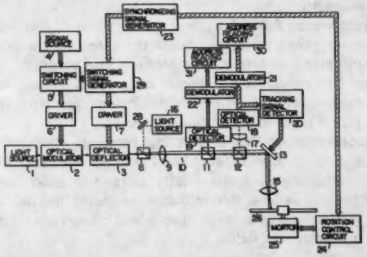
first and second impedances, said first impedance being coupled between said first primary winding and said DC source and said second impedance being coupled between said second primary winding and said DC source such that said first and second impedances are line terminating impedances, comprised of electronic equivalent impedances having a reduced power dissipation; and

wherein said first fluxbucking winding comprises a fluxbucking primary winding having a number of turns substantially the same as the number of turns of said first primary winding and being connected with a polarity opposite to the polarity of said first primary winding and wherein said second fluxbucking winding comprises another fluxbucking primary winding having a number of turns substantially the same as the number of turns of said second primary winding and being connected with a polarity opposite to the polarity of said second primary winding.

4,241,240
OPTICAL INFORMATION RECORDING APPARATUS

Kazuo Shigematsu, Kawasaki; Keizo Kato; Toshimitsu Miyauchi, both of Hachioji; Seiji Yonezawa, Hachioji; Fumiyuki Inose, Kokubunji; Kimio Tatsuno, Kokubunji, and Takeshi Maeda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 26, 1978, Ser. No. 954,869
Claims priority, application Japan, Nov. 4, 1977, 52-131564
Int. Cl.³ H04N *5/76;* G11B *7/12*
U.S. Cl. 179—100.1 G **1 Claim**



1. An optical information recording apparatus comprising:

a first light source for emitting a recording beam;

a second light source for emitting a reproducing beam;

a recording medium having predetermined information recorded thereon;

an optical system for directing said beams from said first and second light sources to said recording medium, said optical system being disposed between said first and second light sources and said recording medium;

first reproducing means for reproducing information on said recording medium by said reproducing beam emitted from said second light source;

means for zero-modulating said recording means emitted from said first light source;

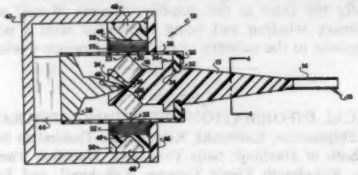
second reproducing means for reproducing information on said recording medium by said zero-modulation beam;
first detecting means for detecting an address of said information reproduced by said first reproducing means;
second detecting means for detecting an address of said information reproduced by said second reproducing means;
means for making the addresses detected by said first and second detecting means to coincide with each other; and
means for displacing said zero-modulation beam by a predetermined distance from the location of said reproduced information on said recording medium;
whereby information carried on the beam emitted from said first light source is recorded on an adjacent track as the beam emitted from said second light source tracks the recorded information.

4,241,241

ELECTROMECHANICAL RECORD DISK DYNAMIC RANGE EXPANDER

Roger V. Scarpitti, Akron, Ohio, assignor to Janice K. Scarpitti, Akron, Ohio

Filed Nov. 20, 1978, Ser. No. 961,867
Int. Cl.³ H04R 11/12
U.S. Cl. 179—100.41 Z **19 Claims**



1. A stereo cartridge comprising;
a shank having a stylus depending from a first end thereof;
flux conducting element retaining means at a second end thereof which means provides a recess point about which point said flux conducting retaining means radially oscillates;
a magnet;
pivot means formed by said recess point contacting a fulcrum point, said point being the extended tip of a broad circular base which base contacts said magnet;
first flux conducting elements maintained by said retaining means, central axis of which elements are normal to said recess point and said fulcrum point;
second magnet flux conducting elements operatively connected to said magnet, said second and said first flux conducting elements axially aligned in pairs, said pairs defining at least two movable magnetic flux fields and;
at least one stationary coil interposed in each of said movable magnetic flux fields.

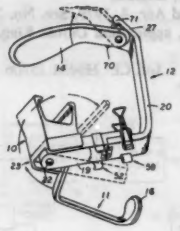
4,241,242

TELEPHONE HANDSET HOLDER

Hsu-Chieh Yeh, and Quey-Mei Yeh, both of 1174 Bucknell Dr., Monroeville, Pa. 15146

Filed Jan. 15, 1979, Ser. No. 3,622
Int. Cl.³ H04M 1/05
U.S. Cl. 179—157 **10 Claims**

1. A telephone handset holder comprising:
a curved member adapted for engagement over the back of a user's neck,
a handset clamp adapted for holding a telephone handset,
means of attaching said handset clamp to the front end of said curved member,
a leg member including a foot element adapted for resting on a person's upper chest and supporting said handset clamp, being pivotally secured to said handset clamp,
means of folding said curved member to enable a telephone



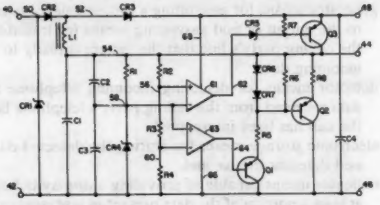
handset be placed on the cradle of a telephone when the handset holder is installed on the telephone handset, and
means of maintaining said curved member in an unfolded operation configuration.

4,241,243

POWER REGULATOR FOR USE WITH LINE SIGNAL REPEATERS WHICH ARE REMOTELY POWERED

Edward T. Ball, Coquitlam, Canada, assignor to GTE Lenkurt Electric (Canada) Ltd., Burnaby, Canada

Filed Dec. 4, 1978, Ser. No. 965,974
Int. Cl.³ H02H 9/02, 1/04; H04B 3/44
U.S. Cl. 179—170 J **5 Claims**



1. In a transmission system in which operating power is fed over the transmission cable pair to line signal repeaters, a power regulator used in conjunction with a line signal repeater, which comprises:
an input circuit including first and second terminals connected to receive line current including a DC power feed current component and an induced longitudinal current component;
an output circuit including third and fourth terminals, said output circuit when coupled to said repeater supplying load current thereto, said fourth terminal being common with said second terminal;
impedance means, having an input terminal connected to said first terminal and an output terminal connected to said third terminal, for receiving said line current from said first terminal and for delivering said load current to said third terminal;
a fifth terminal;
energy storage means connected across said fourth and fifth terminals;
rectifying means connected across said first and fifth terminals, said rectifying means being conductive when the line current exceeds the load requirements of the line signal repeater and being non-conductive otherwise, said rectifying means thereby providing excess line current to charge said energy storage device;
shunt voltage regulating means connected between said

fourth terminal and said third terminal, said shunt voltage regulating means being responsive to said line current for producing a constant voltage across said third and fourth terminals so long as said line current exceeds a predetermined minimum, and causing said constant voltage to decrease when said line current falls below said minimum, said shunt voltage regulating means also providing a reference voltage at a reference voltage terminal;

biasing means connected between said third and fourth terminals for providing first and second voltages at first and second bias voltage terminals, respectively, said bias voltages varying in response to variations in amplitude of the line current;

control means responsive to said reference voltage and said first bias voltage, for controlling the period of and rate of energy discharge from said energy storage means to said output circuit, whereby the energy in said energy storage means supplements a power feed current when the line current falls below said predetermined minimum; and

shunt current regulating means responsive to said reference voltage and to said second bias voltage, for controlling the amplitude of the current passed through said output terminals.

4,241,244

ELECTRIC SWITCHES

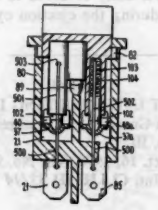
David A. Swann, Cnr. Forster & Hardner Rds., Mount Waverley, Victoria, Australia (3149)

Filed Dec. 22, 1977, Ser. No. 863,176

The portion of the term of this patent subsequent to Mar. 30, 1996, has been disclaimed.

Int. Cl.³ H01H *21/00*

U.S. Cl. 200—6 R **18 Claims**



1. An electric switch having a mechanism comprising an actuator (81, 89, 102–104): a contact bridging member (40) capable of being moved along a path by said actuator: at least two spaced apart electric contacts (21, 22) arranged along the path wherein one of the contacts (22) functions, in use, as a fulcrum; said actuator applying force to said member at an area (37) intermediate its ends and on one side thereof; said member having an opposite side which, in use, engages said contacts, said opposite side being comprised of first and second surface portions which are at an angle to one another diverging from said path; said surface portions, in a first position of said member, engaging respective ones of said contacts and at least one such surface portion being inclined to a straight line extending between the surfaces of said contacts which are engaged by said member when in said first position and said area (37) of said contact bridging member being located to the side of said fulcrum adjacent the other of the contacts, whereby a part of said member nests closely with and between said contacts; said force being applied by said actuator to said member in a direction urging said part of said member into such nesting relation; said member (40) being movable, from said first position, slideably with respect to said contacts and in so doing the trailing one of said surface portions moves with a component of motion in the direction of said force such that said member initially rotates in one direction, said part moving to become relatively less nested and does so against the action of said force tending to restore it to the nested condition, said area approaching said fulcrum and thereafter, after said area has passed said fulcrum, said member pivoting about said fulcrum in the opposite direction whereby it disengages from the other of the contacts; and said electric switch further including circuit means (501) forming a circuit between an electrical contact and said contact bridging member.

4,241,245

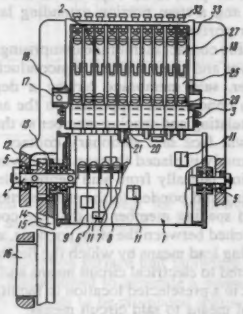
PROGRAMMED SWITCHING DEVICE

Stepan S. Semenov, 3 Sreletsky pereulok, 2a, kv. 64, and Volf S. Pevzner, prospekt Vernadskogo, 125, kv. 268, both of Moscow, U.S.S.R.

Filed Sep. 11, 1978, Ser. No. 941,072

Int. Cl.³ H01H *43/00*

U.S. Cl. 200—38 R **18 Claims**



1. A programmed switching device for setting an angular position of a shaft of a mechanism, comprising:

a casing;

a shaft of the device installed inside said casing;

a kinematic linkage between said shaft of the device and the shaft of the mechanism the angular position of which is to be set;

switching elements;

a cam-and-lever mechanism comprising an axle and cams with rollers and interacting with said switching elements to ensure operation of the switching elements corresponding to the set angular position of the shaft of the mechanism;

a setting mechanism interconnected with said shaft of the device and comprising:

discs, each provided with a slot and secured on said shaft of the device, and each having a rotation plane;

a dividing element movably installed relative to said shaft of the device and accommodating all said discs;

a kinematic linkage of said dividing element with the shaft of the mechanism;

cutouts located in the side surface of said dividing element, one cutout being provided for each rotation plane of said discs;

said cams of the cam-and-lever mechanism being installed on said axle with provision for rotation of each cam in the rotation plane of the corresponding disc;

said switching elements, each arranged in the rotation plane of the corresponding said disc;

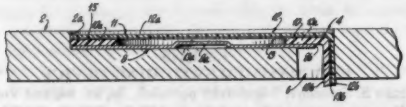
the dimensions of said cutouts of said dividing element and the dimensions of the disc slots corresponding to said cutouts selected to match the size of said rollers of the cam-and-lever mechanism to enable said discs to interact with said corresponding switching elements.

4,241,246

THIN TOUCH TYPE SWITCH OF SEALED CONSTRUCTION

Thomas J. Lugaresi, Campbell, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Sep. 29, 1978, Ser. No. 947,122
Int. Cl.³ H01H 3/12
U.S. Cl. 200—52 R **13 Claims**



12. A subassembly for a touch type switch which includes stationary contact means, the subassembly comprising:

(a) an insulating and spacing member comprising an annular portion adapted to be disposed on the stationary contact means and a stem portion extending laterally from said annular portion;

(b) a flexible contact membrane comprising an inner conductive layer and outer resilient nonconductive layer bonded together, said membrane having a depressible contact portion bonded and supported on the annular portion of said insulating and spacing member so that the conductive layer will face said stationary contact means when the subassembly is placed thereon and having a stem portion extending laterally from said depressible contact portion overlying and bonded to the stem portion of said insulating and spacing member so that the conductive layer is sandwiched between the stem portions, said stem portions providing lead means by which the flexible contact can be connected to electrical circuit means and being adapted to be bent in a preselected location to facilitate connection of the lead means to said circuit means.

4,241,247

CONTROLLER FOR ROTARY COLLATOR

Leroy H. Byrne, Waterbury, and Arnold Fassman, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 23, 1978, Ser. No. 908,747
Int. Cl.³ H01H 3/16
U.S. Cl. 200—61.41 **3 Claims**

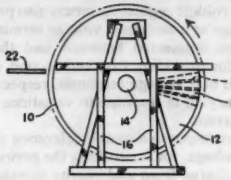
1. In a rotary collator having a high speed rotating drum with a plurality of bins therein from which sheets are ejected and a synchronously rotating programming disc for controlling the actuation of an electrical actuating means for a clamping means in each of said bins, which normally opens and closes during an ejection cycle, apparatus for preventing inadvertent actuation of said electrical actuating means operated by said rotating programming disc, said apparatus comprising:

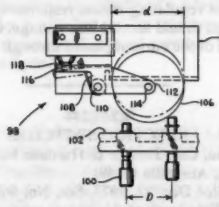
A. a plurality of selector pins mounted on said disc so as to be movable between two oppositely disposed spaced apart positions relative to said disc, said spaced apart positions corresponding to a closed or open position of said clamping means, said pins being equi-spaced with respect to one another;

B. a circular follower adapted to be moved by contact with said pins between two operating positions depending upon the positions of said pins with respect to said spaced apart positions thereof;

C. means for pivotably mounting said follower in position to be contacted by said pins as said disc is caused to rotate; and

D. means responsive to a pivoted movement of said follower for operating said electrical actuating means for causing said clamping means to remain closed during the ejection cycle when the clamping means would normally be opened, said follower having a diameter sufficiently greater than the spacing between two adjacent pins so that said follower can move from one of said operating positions to the other only when said follower is contacted successively by two adjacent pins which are in said oppositely disposed spaced apart positions, whereby, as said





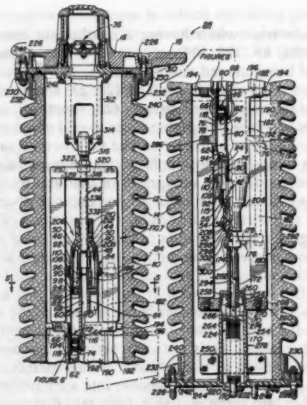
disc rotates at a high rate of speed to cause said pins to move past said follower, said electrical actuating means cannot be inadvertently actuated to allow the clamping means to open during the ejection cycle when it should remain closed.

4,241,248

CIRCUIT INTERRUPTING DEVICE

Joseph Bernatt, Casa Grande, Ariz., assignor to S & C Electric Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,687
Int. Cl.³ H01H 33/14
U.S. Cl. 200—145 **5 Claims**



1. An improved high-voltage circuit interrupter of the type having a housing containing pressurized, arc-extinguishing dielectric gas; opposed terminals on the housing for respective connection to opposite sides of a circuit; and two pairs of normally engaged, mutually relatively movable contacts

which upon disengagement create a pair of gaps in series, arcs in the gaps being interrupted; wherein the improvement comprises:

a first stationary contact continuously electrically connected to one of the terminals;

a first movable contact continuously electrically connected to the other terminal;

first conductive tube means mounted for axial movement and having first and second opposed ends;

a second movable contact carried by the first end of the first tube means, the second movable contact being selectively engageable with and disengageable from the first stationary contact upon axial movement of the first tube means;

second stationary conductive tube means having first and second opposed ends, the first movable contact being movable toward and away from the first end of the second tube means along the axis thereof, the first and second tube means being telescoped for relative axial movement at their second ends;

a second stationary contact carried by the first end of the second tube means for engagement with and disengagement from the first movable contact upon movement thereof; and

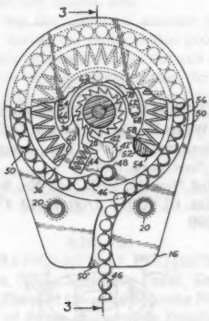
means for electrically interconnecting the first and second tube means in all relative positions thereof.

4,241,249

PULL CHAIN ATTACHMENT FOR ROTARY LIGHT SWITCH

Louis W. Chundelak, Jr., 13725 NE. Fremont Ct., Portland, Oreg. 97230

Filed Sep. 14, 1978, Ser. No. 942,321
Int. Cl.³ H01H *17/06*
U.S. Cl. 200—161 **11 Claims**



1. A pull chain attachment for an electric lamp socket switch having a thumb wheel rotary shaft, comprising:

(a) a hollow housing having a chamber therein,

(b) first and second rotary clutch members in the chamber, operable in one direction of rotation of the second clutch member to be coupled together for simultaneous rotation,

(c) connecting hub means on the first rotary clutch member extending axially therefrom through the housing for detachable connection to the thumb wheel rotary shaft of an electric lamp socket switch, and for mounting the housing for pivotal movement freely relative to the first rotary clutch member and thumb wheel rotary shaft and lamp socket,

(d) the second rotary clutch member being disposed in the housing chamber to form between them an arcuate pull chain guide passageway,

(e) the housing having a pull chain outlet passageway communicating with the guide passageway,

(f) an elongated pull chain secured at its inner end to the second rotary clutch member and extending therefrom through the guide and outlet passageways, for rotating the second rotary clutch member from a pull chain retracted position to a pull chain extended position, and

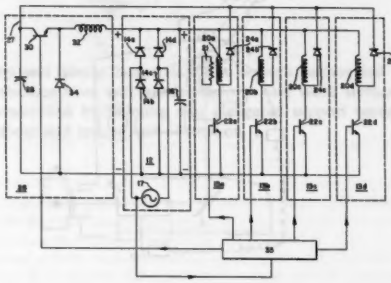
(g) retractor means engaging the second rotary clutch member for rotating it to said pull chain retracted position.

4,241,250

INDUCTION COOKING SYSTEM

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,719
Int. Cl.³ H05B *6/08*; H02M *7/537*
U.S. Cl. 219—10.49 R **6 Claims**



1. An induction cooking system for inductively heating metallic cooking utensils comprising:

(a) a source of rectified AC;

(b) at least one induction surface unit including:

an induction coil adapted to generate a magnetic field to cause eddy currents to be circulated within the surface of a metallic cooking utensil positioned adjacent thereto so as to heat said utensil;

switching means coupled in series with said source of rectified AC and said coil, said switching means being rendered conductive at a prescribed rate to energize said coil; and

unidirectional conduction means coupled to said coil for conducting reactive current present in said coil during intervals when said switching means is rendered substantially nonconductive; and

(c) reactive power converter means coupled to the unidirectional conduction means and the source of rectified AC of each said induction surface unit for storing the reactive energy present in the induction coil of each said induction surface unit during intervals when said switching means is rendered substantially nonconductive, said reactive power converter means discharging the stored reactive energy across said source of rectified AC at predetermined intervals, thereby permitting each of said induction coils to be energized during the entire 360° cycle of voltage supplied by said source of rectified AC.

4,241,251

PHOTOELECTRIC SWITCHING MEANS FOR MICROSCOPE ILLUMINATION SYSTEM

Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

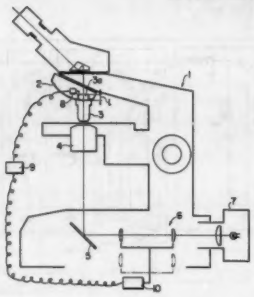
Filed Oct. 25, 1978, Ser. No. 954,591
Claims priority, application Japan, Oct. 29, 1977, 52-130070
Int. Cl.³ G02B *21/08*
U.S. Cl. 250—205 **6 Claims**

1. For a microscope which has a microscope body including a revolver having a plurality of objective lenses mounted thereon for alternative use, by having an objective screw means of each such objective lens received in a respective socket means in the revolver, and by providing for movement

of said revolver so as to make it possible to move each objective lens alternatively to the same site, which microscope has a specimen-illuminating system, including means for changing illumination conditions to at least two levels;

an automatic switching means, comprising:

each of said objective screw means having a signal means provided thereon, at least one of said signal means providing a signal which is detectably different from that provided by at least another of said signal means, which signals all correspond with the magnification power obtainable through use of the respective objective lenses;



detecting means having signal receiving means arranged within said microscope body for detecting the said signal being emitted by the particular one of said objective lenses which happens to be at the said site;

a driving means for changing said illuminating conditions to said at least two levels;

and a control means operably interposed between said detecting means and said driving means, for controlling said driving means to change said illuminating conditions on the basis of detection of which signal is being emitted at said site by the respective said signal means.

4,241,252

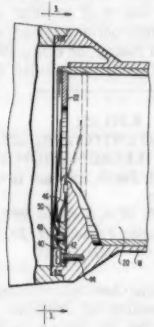
FLEXIBLE LEAF CONTACT SYSTEM FOR NIGHT VISION OPTICAL INSTRUMENTS

Alan Litman, Pittsburgh, Pa., assignor to Smith & Wesson Chemical Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 887,690, Mar. 17, 1978, abandoned. This application May 17, 1979, Ser. No. 39,934

Int. Cl.[3] H01J *31/50*

U.S. Cl. 250—213 VT **1 Claim**



1. An optical instrument comprising:

a generally elongated and cylindrical housing having a generally annular face,

a terminal block mounted on said face,

an electrically actuated light intensifier tube carried by said housing, said intensifier tube having an end face, an annular ring carried by said intensifier tube about its end face,

an objective lens carried by said housing forwardly of said intensifier tube,

said intensifier tube being disposed concentrically within said housing for movement of said housing and intensifier tube relative to one another in the direction of the longitudinal axis of said cylindrical housing,

a pair of flexible, elongated electrical leaf contacts each connected at one end to the instrument housing, one of said leaf contacts being secured at one end to said terminal block and extending inwardly therefrom for contact with the terminal on the end face of said intensifier,

a pair of electrical terminals disposed on the end face of said electrically actuated intensifier tube, said terminals being carried by said annular ring,

means for maintaining the opposite ends of said contacts in electrical contact with said terminals upon relative movement of said housing and said intensifier tube, said contacts being disposed to one side of said housing with at least one contact extending into the path of movement of said imaging device,

a battery carried by said housing, means for transmitting power from said power source to said terminal block and said one contact including a switch carried by said housing, and each of said leaf contacts having a plastic coating substantially the entirety of its length to reduce contact leaf vibration.

4,241,253

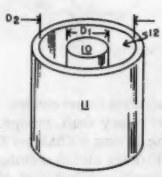
EPITHERMAL NEUTRON DETECTOR

Linus S. Allen; Wyatt W. Givens, both of Dallas, and William R. Mills, Jr., Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,532

Int. Cl.[3] G01T *3/00*; H01J *47/12*

U.S. Cl. 250—390 **4 Claims**



1. An epithermal neutron detector comprising:

(a) a thermal neutron counter,

(b) a thermal neutron shield surrounding said counter, and

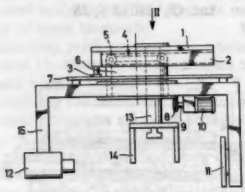
(c) an epithermal neutron moderating material located between said counter and said shield for slowing down epithermal neutrons which penetrate said shield to enable those neutrons to be more readily absorbed by said counter, the thickness of said moderating material and the ratio of the diameter of said counter to the outer diameter of said moderating material being such that said counter yields a maximized neutron counting rate greater than the highest possible counting rate obtainable when said counter completely fills the inside diameter of said thermal neutron shield.

4,241,254

X-RAY SOURCE MOVING MECHANISM SUITABLE FOR PANORAMIC RADIOGRAPHY

Veikko F. Vilili, Vantaa, Finland, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 858,431, Dec. 7, 1977, Pat. No. 4,145,611. This application Nov. 24, 1978, Ser. No. 963,463
Claims priority, application Finland, Dec. 10, 1976, 763569
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.[3] G03B *41/16*
U.S. Cl. 250—439 P 12 Claims



1. A mechanism for moving an X-ray source and an X-ray sensitive film holder around a patient's head so that the image of an object, having at least partially the shape of a dental arch, can be obtained on the film; said mechanism comprising:

a stationary frame,

a rotatable support arm having a center of rotation,

an X-ray source attached to one end of the support arm,

a film holder attached to the opposite end of the support arm,

means for positioning the patient's head between the X-ray source and the film holder, and

means for moving the center of rotation of the rotatable support arm, during the radiographic procedure, along a rectilinear path perpendicular to the axis of symmetry of the dental arch, in such manner that the position of the center of rotation along the rectilinear path is dependent at any given moment on the angular position of the support arm so that the X-ray beam from the X-ray source at any given moment during the radiographic procedure is directed substantially perpendicular to that part of the object having the shape of the dental arch.

4,241,255

ULTRAVIOLET RAY PROJECTOR

Mitsuru Sugiyama, Noda; Yoshitake Fukui, Koshigaya; Yoshio Yazaki, Chofu; Haruaki Ono, and Shusaku Nakanishi, both of Nihonbashi, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; Lonseal Corporation and Orc Manufacturing Co., Ltd., all of Tokyo, Japan

Filed Jan. 11, 1979, Ser. No. 2,601
Claims priority, application Japan, Feb. 2, 1978, 53/11245; Feb. 2, 1978, 53/11246
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—504 R 5 Claims

1. An ultraviolet ray projector device for use in curing paint which comprises:

an elongated reflector;

a tubular ultraviolet lamp disposed in said reflector;

an elongated casing having an opening port in one side, said reflector and said ultraviolet lamp being disposed in said casing;

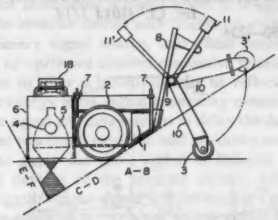
a truck frame, said casing being attached to said truck frame;

a pair of main wheels rotatably attached to said truck frame, said pair of main wheels having a first common axis of rotation;

at least one elongated support member having a first end and a second end, said first end being pivotably attached to said truck frame, said elongated support member pivoting about a second axis which is parallel to said first axis; and

at least one sub-wheel rotatably attached to said second end of said elongated support member;

whereby the elevation angle of the ultraviolet rays produced



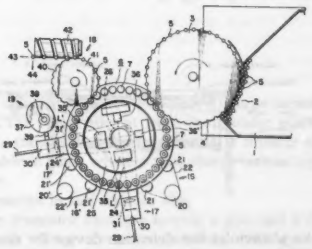
by said tubular lamp relative to a work surface and the distance from said tubular lamp to said work surface is controlled by pivoting said elongated support member about said second axis of rotation.

4,241,256

APPARATUS FOR DETECTING FOREIGN MATTERS IN LIQUIDS

Ryosaku Tagaya, Isesaki, and Tsugutoshi Sugiyama, Akishima, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,622
Claims priority, application Japan, Jul. 29, 1977, 52/91193
Int. Cl.[3] H01J *40/14*
U.S. Cl. 250—223 B 11 Claims



1. An apparatus for detecting foreign matter in liquid in containers, comprising:

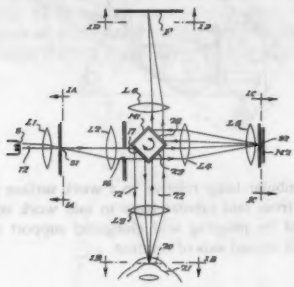
a transferring board on which a plurality of containers to be inspected are held at certain intervals, a means for rotating the containers abruptly in succession, said transferring board being mounted for movement continuously at a constant rate, a detecting means comprising a light source and lens and detector located along a common axis and all mounted for reciprocation together along said transferring board with said common axis having a direction of movement transverse to itself, and a reciprocating means for advancing said detecting means over a prescribed distance in synchronism with said transferring board, while detecting light from the container inspected, and subsequently retracting said detecting means more rapidly than said advancing, to the position where a succeeding container is detected.

4,241,257

SCANNING MICROSCOPIC APPARATUS

Charles J. Koester, 4940 Pine Ledge West, Clarence, N.Y. 14031

Division of Ser. No. 902,277, May 3, 1978, Pat. No. 4,150,264.
This application May 24, 1979, Ser. No. 42,085
Int. Cl.³ H01J 3/14
U.S. Cl. 250—235 40 Claims



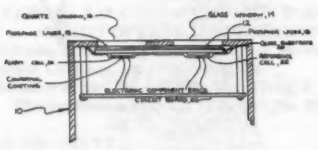
1. A scanning optical system for producing an image of an object including a light source, means for directing slit shaped illumination light from said source to said object including a rotatable first mirror surface, a second mirror surface which is rotatable synchronously with said first mirror surface and which reflects light emanating from the object, means to image said light from said object onto an array of detectors and electrical circuitry for processing the signals from said array of detectors.

4,241,258

ULTRAVIOLET FIRE DETECTOR

John M. Cholin, Hackensack, N.J., assignor to Firetek Corporation, Hawthorne, N.J.

Filed Dec. 11, 1978, Ser. No. 968,132
Int. Cl.³ G01J 1/42
U.S. Cl. 250—372 16 Claims



1. An ultraviolet fire detection device for the detection of ultraviolet emissions from a fire in the environment comprising:

a housing having a plurality of windows therein, said windows positioned for exposure to the fire hazard area;

at least one of said windows being a translucent panel which is opaque to ultraviolet emissions;

at least one of said windows being a translucent substance which is transparent to ultraviolet emissions;

at least one phosphor coated surface disposed within said housing and inwardly of the side of said windows facing the fire hazard area, said phosphor coated surface fluorescing when ultraviolet emissions impinge thereon;

solid state photosensitive detection cells positioned behind said phosphor coated surface and aligned behind each of said windows;

said photosensitive cells responsive to the light emanating from the fluorescing phosphor coated surface;

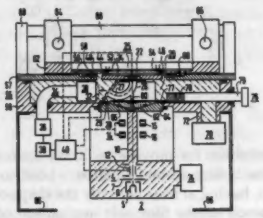
electrical means for comparing the output of a cell disposed behind a window opaque to the ultraviolet emissions and a cell disposed behind a window which is transparent to ultraviolet emissions, said electrical means sounding an alarm when ultraviolet emissions are present.

4,241,259

SCANNING ELECTRON MICROSCOPE

Hans P. Feuerbaum, and Johann Otto, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,378
Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819165
Int. Cl.³ H01J 9/38
U.S. Cl. 250—457 2 Claims



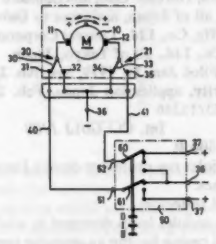
1. In a scanning electron microscope with electron-optical column for the contactless testing of a sample disposed in a sample chamber in a vacuum on a sample holder, said sample holder being one which forms, directly or indirectly, a vacuum tight closure for the sample chamber, the improvement comprising a thrust ball bearing disposed between the closure and the housing of the sample chamber.

4,241,260

MOTORIZED HEADLAMP POSITION ADJUSTING CIRCUIT

Jakob Botz, Ingersheim; Erich Mutschler, and Adam Weber, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,659
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806131
Int. Cl.³ B60Q 1/06
U.S. Cl. 307—10 LS 6 Claims



1. A control circuit for a motorized headlamp position adjusting arrangement, comprising:

a motor having first and second terminals;

a voltage source having first and second polarities;

a first position switch having a hysteresis switching characteristic and comprising a movable contact connected to said first terminal and a first plurality of stationary contacts;

a second position switch having a hysteresis switching char-

acteristic and comprising a movable contact connected to said second terminal and a second plurality of stationary contacts;

a multiposition operating switching having at least three switching positions and comprising a first plurality of input terminals, a second plurality of input terminals, first and second output terminals, and first and second bridging contacts, said first and second bridging contacts being respectively coupled to said first and second output terminals, said first and second bridging contacts being jointly movable to each of said switching positions such that in each switching position said first bridging contact contacts one of said first plurality of input terminals and said second bridging contact contacts one of said second plurality of input terminals;

means connecting predetermined input terminals of said first and second pluralities of input terminals to said first polarity of said voltage source;

means connecting the remaining input terminals of said first and second pluralities of input terminals to said second polarity of said voltage source;

said first plurality of input terminals being arranged such that when said first bridging contact is in a first one of said switching positions one of said predetermined input terminals of said first plurality input terminals is contacted, and when in a second adjacent one of said switching positions one of said remaining input terminals of said first plurality of input terminals is contacted;

a first conductor connecting said first output terminal to one of said first plurality of stationary contacts, and a second conductor connecting said second output terminal to one of said second plurality of stationary contacts; and

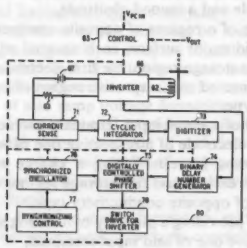
means connecting other ones of said first and second plurality of stationary contacts to said voltage source.

4,241,261

CIRCUIT CONTROL TO LIMIT POWER DRAIN OF AUXILIARY POWER SUPPLY IN UPS SYSTEM

Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,881
Int. Cl.[3] H02J 9/06
U.S. Cl. 307—45 **6 Claims**



1. A control system to control power flow in an uninterruptible power supply having a transformer, with a first and second input to accept a primary power source and a reserve power source, respectively, and an output to accept a load to be energized;

said reserve power source including an inverter circuit to generate a periodic voltage signal, said inverter circuit having an inverter input to accept a DC voltage source and an inverter output coupled to the second input of said transformer, said inverter circuit having operative characteristics, which introduce harmonics into DC current supplied by the DC voltage source to the inverter;

the control system including, a cyclic integrator connected at the inverter input to monitor the DC current supplied by the DC voltage source to the inverter circuit and including an energy storage device to integrate the DC current monitored for one cycle of a harmonic, quantizing means for generating a digit responsive to a change in an energy level on said energy storage device; and

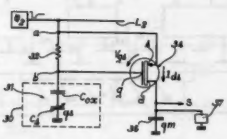
phase control means responsive to said quantizing means and coupled for controlling a signal phase of a signal generated by the inverter circuit with respect to a signal phase of the primary signal source, said phase control means including an up/down counter responsive to said quantizing means to alter a count therein to reflect the said change in energy level, signal generating means to generate a drive signal and delay means to delay the drive signal in response to a count stored in said up/down counter and coupled to apply the drive signal as delayed to power switching devices of the inverter circuit, whereby an inverter circuit output signal is generated at a phase relative to the phase of the primary power signal so that the inverter circuit draws no net power from the DC voltage source.

4,241,262

CIRCUIT FOR MEASURING THE CHARGE STORED IN A CHARGE-COUPLED DEVICE

Luc Audaire, La Tronche; Gerard Merckel, Sassenage, and Guy Rigaux, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 26, 1978, Ser. No. 909,985
Claims priority, application France, May 27, 1977, 77 16272
Int. Cl.[3] H03K 21/34, 5/14; H03H 15/02; G11C 19/28
U.S. Cl. 307—221 D **9 Claims**



1. A charge transfer device (CTD) with a charge measuring circuit, said CTD comprising at least one transfer electrode connected to a transfer line for transmitting a transfer signal which is variable in time, wherein said charge measuring circuit comprises:

a resistor inserted in said transfer line,

a MOS-type transistor having a source, a gate and a drain, said resistor being connected between said gate and source,

a capacitor connected to said drain,

and an output connected to said drain.

4,241,263

CHARGE TRANSFER DUAL FREQUENCY DELAY LINE WITH PHASE INDEPENDENT COUPLING

William E. Engeler, and Richard D. Baertsch, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,258
Int. Cl.[3] G11C 19/28; H01L 29/78
U.S. Cl. 307—221 D **1 Claim**

1. In combination

a substrate of semiconductor material of one conductivity type having a major surface,

a first storage electrode insulatingly overlying said major surface,

a first transfer electrode adjacent said first electrode and insulatingly overlying said major surface,

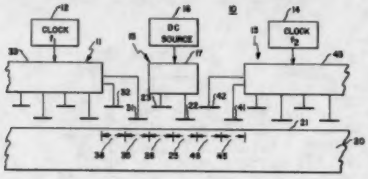
means for applying fixed voltages to said first storage and said first transfer electrode to form in said substrate a first storage region and a first transfer region respectively, the surface potential of said first storage region having a first storage level and the surface potential of said first transfer region having a first transfer level in the absence of minority carriers therein, said first storage level being energetically lower than said first transfer level for minority carriers in said substrate,

a second storage electrode adjacent said first transfer electrode and insulatingly overlying said major surface,

a second transfer electrode adjacent said second storage electrode and insulatingly overlying said major surface,

means for applying first pulsating voltages of a first frequency to said second storage and said second transfer electrodes to form in said substrate a second storage region and a second transfer region respectively, the surface potential of said second storage region in the absence of charge carriers therein varying between a second low storage level and a second high storage level, the surface potential of said second transfer region in the absence of charge therein varying between a second low transfer level and a second high transfer level, said second low transfer level being higher than said second low storage level and said second high transfer level being higher than said second high storage level, said second high storage level being higher than said first transfer level,

a third transfer electrode adjacent said first storage electrode and insulatingly overlying said major surface,



a third storage electrode adjacent said third transfer electrode and insulatingly overlying said major surface,

means for applying second pulsating voltages of a second frequency to said third storage electrode and said third transfer electrode to form in said substrate a third storage region and a third transfer region respectively, the surface potential of said third storage region in the absence of charge carriers therein varying between a third low storage level and a third high storage level, the surface potential of said third transfer region in the absence of charge therein varying between a third low transfer level and third high transfer level, said third low transfer level being higher than said third low storage level and said third high transfer level being higher than said third high storage level, said third low transfer level being lower than said first storage level and said third high transfer level being higher than said first storage level and said first transfer level,

first means for transferring charge periodically at said first frequency into said second storage region during the occurrence of said second low storage level, whereby during the occurrence of said second high storage level charge is transferred from said second storage region into said first storage region and during the occurrence of said third low storage level charge is transferred from said first storage region into said third storage region,

said first means for transferring charge comprising a first charge transfer shift register including a plurality of stages, the last stage of which includes said second storage electrode,

second means for transferring charge periodically at said second frequency from said third storage region during the occurrence of said third high storage level,

said second means for transferring charge comprising a second charge transfer shift register including a plurality of stages,

the dimension of said first storage electrode in the direction of charge transfer thereunder being greater than the dimension of the storage electrodes of said second shift register in the direction of transfer of charge thereunder.

4,241,264

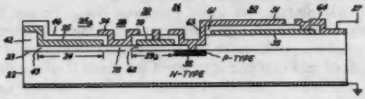
SAMPLED DATA FILTERING AND MULTIPLEXING APPARATUS

Marshall K. Quick, Whitesboro, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 21, 1979, Ser. No. 40,948

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78, 29/34*

U.S. Cl. 307—221 D **5 Claims**



1. In combination

a substrate of semiconductor material of one conductivity type having a major surface,

a charge transfer shift register including a plurality of n stages including a charge input stage and a charge output stage, each of said stages having a respective storage electrode insulatingly overlying said major surface to provide a respective first charge storage region adjacent said major surface,

clocking means for transferring charge from stage to stage of said shift register,

a charge input circuit for generating and transferring charge into said input stage and a charge output circuit for sensing charge transferred out of said output stage,

a plurality of n capacitors, each capacitor including a first electrode and a second electrode,

a plurality of n regions of opposite conductivity type adjacent said major surface, each situated adjacent a respective first storage region, the first electrode of each capacitor connected to a respective region of opposite conductivity type,

a plurality of n signal input terminals, each connected to the second electrode of a respective one of said capacitors,

gating means for establishing a charge transfer channel between each of said first storage regions and a respective region of opposite conductivity type,

means for providing a plurality of n analog signals, each to a respective one of said input terminals,

means controlling said input circuit for developing in succession sequences of fixed quantities of charge each sequence having the same number n of fixed quantities of charge, the fixed quantities of charge of each sequence being serially transferred in succession into the n stages of said shift register,

means for actuating said gating means after the n fixed quantities of charge of each sequence are stored in the n first storage regions of said shift register for an interval less than the interval of storage of charge therein whereby a plurality of second sequences of charges are produced, each of the charges of a second sequence being formed by alteration of a fixed quantity of charge in a respective first storage region in response to a respective analog signal being applied thereto through a respective capacitor,

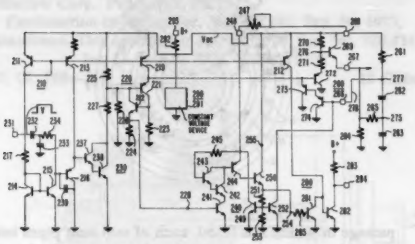
said charge output circuit sensing in succession the charges of each of said second sequence of charges.

4,241,265

TELEVISION VERTICAL RAMP GENERATOR

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,534
Int. Cl.³ H03K *4/08*
U.S. Cl. 307—228 **1 Claim**



1. A ramp generator for use with a ramp voltage utilization means, said ramp generator incorporating an integrated circuit having interface terminals for coupling circuitry disposed on said integrated circuit with circuitry external to said integrated circuit, said ramp generator comprising:

a first capacitance means disposed external to said integrated circuit having a first electrode coupled to a point of reference potential;

second capacitance means disposed external to said integrated circuit having a first electrode coupled to a second electrode of said first capacitance means at a juncture, and having a second electrode;

a source of potential defined between a point of supply potential and said point of reference potential;

first resistance means disposed external to said integrated circuit and coupled to said point of supply potential and to said second electrode of said second capacitance means for forming a ramp voltage across said capacitance means;

first emitter follower means formed on said integrated circuit and having an input coupled to said second electrode of said second capacitance means via one of said interface terminals and having an output electrode;

ramp voltage reponsive means, disposed on said integrated circuit, and having an input coupled to said output electrode of said first emitter follower means and an output coupled to said one interface terminal, for controlling the termination of said ramp voltage formation;

voltage division means formed on said integrated circuit and coupled to said output electrode of said first emitter follower means and to said point of supply potential and having a tap at which appears an attenuated version of said ramp voltage;

second emitter follower means formed on said integrated circuit and having an input electrode coupled to said tap and having an output electrode coupled to said ramp voltage utilization means via another of said interface terminals for supplying a ramp voltage to said ramp voltage utilization means; and

second resistance means disposed external to said integrated circuit and coupled between said other interface terminal and said juncture for controlling said ramp voltage.

4,241,266

PEAK-LIMITING APPARATUS FOR AUDIO SIGNAL

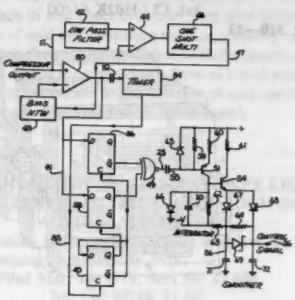
Robert A. Orban, 2413 Lincoln Ave., Belmont, Calif. 94002

Continuation of Ser. No. 858,720, Dec. 8, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,758
Int. Cl.³ H03K *5/08*; H03L *5/00*
U.S. Cl. 307—237 **10 Claims**

1. An apparatus for peak-limiting an audio signal comprising:

evaluation means for evaluating said audio signal to determine the degree to which future values of said audio signal are predictable based on past values of said audio signal;

control signal generation means for generating a control signal to affect the amount of clipping of said audio signal,



said generation means coupled to said evaluation means, said control signal permitting increased clipping when said audio signal is less predictable;

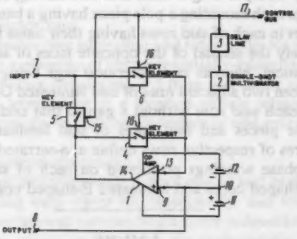
whereby more unnoticeable clipping is permitted.

4,241,267

SWITCHING DEVICE

Anatoly V. Furman, ulitsa Chkalova, 21, kv. 6, Moskovskaya oblast, Zhukovsky, U.S.S.R.

Filed Jun. 9, 1978, Ser. No. 914,215
Int. Cl.³ H03K *17/00, 17/08*
U.S. Cl. 307—239 **1 Claim**



1. A switching device on the basis of an active switching element, comprising:

(a) an operational amplifier having an inverting input, a non-inverting input, and an output;

(b) a first key element and a second key element connected in series between the output and the inverting input of said operational amplifier so as to comprise a first negative feedback circuit of said operational amplifier, said first and second key elements having control inputs;

(c) a third key element connected between said output and said inverting input of said operational amplifier so as to comprise a second negative feedback circuit, said third key element having a control input;

(d) a single-shot multivibrator;

(e) a delay line connected in series with said single-shot multivibrator;

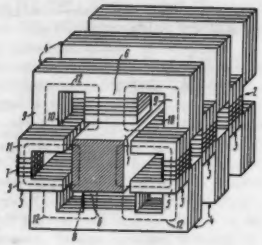
(f) a control bus, said control inputs of said first key element and said key element being connected to said control bus, said control input of said third key element being connected to said control bus via said single-shot multivibrator and said delay line which are connected in series therebetween.

4,241,268

LINEAR INDUCTION MOTOR

Alexandr D. Popov, prospekt Koroleva, 12, kv. 154, and Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, U.S.S.R.

Filed Sep. 20, 1979, Ser. No. 77,312
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—13 **1 Claim**



1. A linear induction motor comprising:
an electrically conductive secondary element of a rectangular cross-section having two pairs of opposite faces;
an inductor magnetically coupled with said electrically conductive secondary element;
laminated U-shaped cores of said inductor, making up two rows and arranged in each row one after another in the direction of a magnetic field, having bases which face the first one of said pairs of the opposite faces of said electrically conductive secondary element;
laminated E-shaped cores making up two rows, disposed in each said row one after another and each having a central leg incorporating a base, and also having two outermost legs each mounting a pole piece having a base, said central bars in each of said rows having their bases facing respectively the second of the opposite faces of said secondary element, ehereas said outermost legs being disposed between two adjacent ones of said laminated U-shaped cores of each said row without a gap so that said bases of said pole pieces and said bases of said laminated U-shaped cores of respective rows define non-serrated active areas;
polyphase windings positioned on each of said laminated U-shaped cores and laminated E-shaped cores.

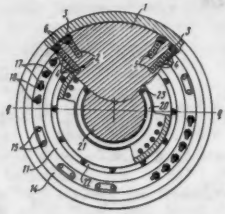
4,241,269

DIRECTLY LIQUID COOLED ROTOR FOR ELECTRICAL MACHINE

Jury F. Antonov, ulitsa Novostroek, 10, kv. 42; Ibragim A. Kadi-Ogly, prospekt Marshala Zhukova, 64, korpus 1; Boris K. Perchanok, ulitsa Saltykova-Schedrina, 17, kv. 54, and Pavel I. Chashnik, Dunaisky prospekt, 42/79, kv. 167, all of Leningrad, U.S.S.R.

Filed Jun. 28, 1978, Ser. No. 919,786
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—61 **1 Claim**

1. A directly liquid cooled rotor for an electrical machine comprising
a body having an axis;
a plurality of poles which are circumferentially spaced from each other;
a winding including a plurality of electrically connected coils which are circumferentially spaced from each other and operatively cooperate with said poles, each of said coils having a plurality of passages arranged for passing a cooling liquid therethrough, said passages communicating with each other so as to form a plurality of hydraulic loops each of which includes a passage for supplying the cooling liquid located at a radially smaller distance and a passage for discharging the cooling liquid located at a radially greater distance from said axis, each of said passages for discharging the cooling liquid having axis; and
a plurality of bent pipes, each of which is fitted in a respective one of said discharging passages and having an open end forming the outlet of said respective discharging



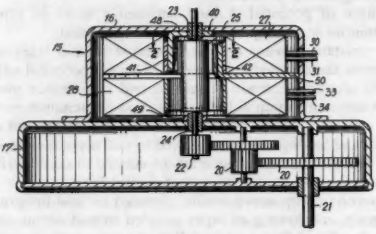
passage in which it is fitted, each of said bent pipes being rotatable relative to the axis of said respective discharging passage so that said open end of each of said pipes which forms the outlet of the respective passage can be radially displaced relative to said axis of said body.

4,241,270

SYNCHRONOUS ELECTRIC MOTOR

Arthur W. Haydon, Middlebury, and John J. Dean, Oxford, both of Conn., assignors to Tri-Tech, Inc., Waterbury, Conn.

Filed Dec. 27, 1977, Ser. No. 864,395
Int. Cl.² H02K *19/00*
U.S. Cl. 310—164 **11 Claims**



1. An electric rotating machine comprising, in combination:
a thin cylindrical nonsalient pole rotor having a pair of rotor poles;
first and second field coils in coaxial relationship with each other and with the rotor;
a housing of magnetic material at least substantially enclosing the first and second field coils;
a stator pole piece assembly within the housing and externally disposed with respect to said rotor, the pole piece assembly having first and second sets of salient stator poles respectively cooperating with the first and second field coils, there being not more than two salient stator poles in each of said sets and the stator poles in the respective sets being angularly spaced apart by approximately ninety electrical degrees, each of said stator poles being in magnetic flux relationship with said pair of rotor poles, at least two of the stator poles being of L-shaped configuration with one of the arms of the "L" forming a radial extension in flux transmitting relationship with the housing, the radial extensions of said two L-shaped stator poles being rectangular and extending outwardly from adjacent the rotor to said housing with their outer ends abutting the inner wall of said housing; and
means for applying current to the first and second field coils

to produce an alternating magnetic flux field in each of said sets of stator poles.

4,241,271

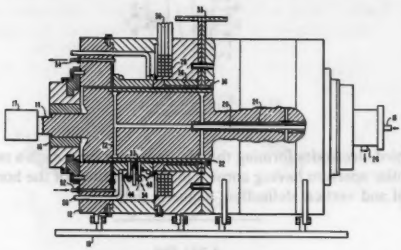
SOLID BRUSH CURRENT COLLECTION SYSTEM

John L. Johnson, Plum Borough, and Lawrence E. Moberly, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 838,181, Sep. 30, 1977, abandoned. This application Jul. 26, 1978, Ser. No. 928,116

Int. Cl.³ H02K *9/28;* H01R *39/00*

U.S. Cl. 310—219 **10 Claims**



1. A solid brush current collecting system comprising:

a dynamoelectric machine having a stator and a rotor supported therein and arranged for electrodynamic cooperation therewith;

at least one current collector on said rotor which collects current during machine operation;

solid current collecting brushes mounted in brush holders on said machine, said brush holders being positioned to permit brush contact with said current collector;

means enclosing said current collector and brushes in a fluid-tight cavity closed to the atmosphere;

means for circulating a pressurized non-oxidizing gas through said cavity;

said gas having an additive mixed therewith, said additive comprising a vaporous organic substance selected from the group consisting of paraffinic hydrocarbons having from 7 to 16 carbons, alcohols having from 7 to 16 carbons, ketones having from 7 to 16 carbons, aldehydes having from 7 to 16 carbons, decalin, and mixtures thereof.

4,241,272

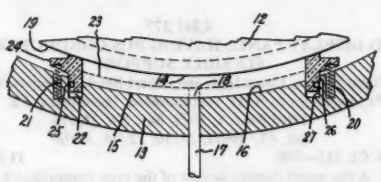
NOVEL LIQUID METAL CURRENT COLLECTOR CONFIGURATION

Robert A. Marshall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,100

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—219 **12 Claims**



1. In an electrodynamic machine wherein a liquid metal current collector provides electrical connection between a fixed stator and a rotatable rotor, said liquid metal current collector being disposed in a gap between said stator and said rotor to provide electrical connection between a rotor collector ring and a stator collector, the improvement comprising: a nonconductive enclosure movably supported on said stator collector extending into said gap for containing a volume of liquid metal therein; means for resiliently biasing said enclosure against a surface of said rotor collector ring adjacent said enclosure, such that one surface of said enclosure is in contact with said surface of said rotor collector ring over substantially the entire area of said one enclosure surface; a source of supply of liquid metal in flow communication with the interior of said enclosure; and means for supplying a flow of liquid metal from said source under pressure to the interior of said enclosure to maintain said enclosure filled with liquid metal.

4,241,273

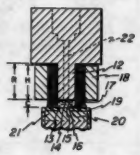
COMPLIANT CAGE FOR RACEWAY-TYPE LIQUID METAL CURRENT COLLECTOR FOR HIGH-SPEED ACYCLIC MACHINES

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,809

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—219 **12 Claims**



1. In an electrical current collector for an acyclic machine, comprising:

a rotor collector ring;

a stator collector ring encircling said rotor collector ring and including a plurality of circumferentially-extending stator fins protruding radially-inward from said stator collector ring and terminating at a location closely adjacent and spaced from the radially-outer surface of said rotor collector ring;

the improvement comprising:

a plurality of compliant cage means, one of said cage means surrounding each stator fin, respectively, and forming a compliant raceway surrounding a space defined axially by said cage means and defined circumferentially by the radially-innermost surface of said fin together with the radially-outermost surface of said rotor collector ring;

said cage means having walls of resilient nonconductive filamentary material extending toward the radially-outermost surface of said rotor collector ring; said walls being deformed by contact with said radially-outermost surface of said rotor collector ring; and

a volume of liquid metal situated in each said space, said volume of liquid metal being sufficient to make physical contact with the radially-innermost surface of each of said stator fins, respectively, and the radially-outermost surface of said rotor collector ring.

4,241,274

DYNAMOELECTRIC MACHINE AND STATIONARY ASSEMBLY THEREFOR

Allen A. Brammerlo, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

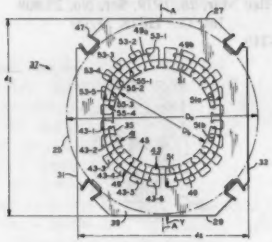
Filed May 10, 1978, Ser. No. 904,607

Int. Cl.³ H02K *1/12*

U.S. Cl. 310—259 **27 Claims**

1. For use in a two pole single phase alternating current dynamoelectric machine; a stationary assembly comprising a

plurality of stacked laminations including a preselected magnetic reference circumference of a first diameter (Do), a first pair of oppositely disposed sides spaced apart a first linear dimension (D1), a second pair of oppositely disposed sides spaced apart a second linear dimension (d2) at an angular location with respect to said first side pair, one of said first linear dimension (d1) and said second linear dimension (d2) being generally about the same as said first diameter (Do) and greater than the other of said first linear dimension (d1) and said second linear dimension (d2), a bore generally concentric with said preselected magnetic reference circumference, said bore having a second diameter (Db) wherein a first dimensionless ratio between said second linear dimension (d2) and said second diameter (Db) is greater than about 1.60, a second dimensionless ratio between said first linear dimension (d1) and said second diameter (Db) is greater than about 1.80 and a third dimensionless ratio between said second linear dimension (d2) and the difference of said first diameter (Do) and said second diameter (Db) which is less than about 1.99, a plurality of spaced apart teeth (t) respectively having inner end portions



defining said bore and having an average tooth width (w) wherein a fourth dimentionless ratio between the product of said teeth plurality (t) and said average tooth width (w) and the difference of said first diameter (Do) and said second diameter (Db) is in a range of between about 1.45 and about 1.75 and wherein a fifth dimensionless ratio between said second diameter (Db) and said product of said teeth plurality (t) and said average tooth width (w) is also in a range of about 1.45 and about 1.70, a plurality of winding slots disposed between adjacent teeth of said teeth plurality (t), some of said winding slots of said plurality thereof being predeterminately larger than others of said winding slots, a yoke portion extending generally between said winding slots and said first and second side pairs and having a pair of maximum sections located generally between said some larger slots and said first side pair, and at least one distributed winding including a plurality of coils arranged in coil groups in at least some of said some larger winding slots to form a pair of running poles upon the excitation of said winding with each of said running poles spanning a preselected number of said teeth.

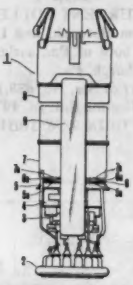
4,241,275

IN-LINE TYPE ELECTRON GUN STRUCTURE FOR COLOR PICTURE TUBES

Masaaki Yamauchi, Tougane, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 24,992
Claims priority, application Japan, Apr. 7, 1978, 53-40303
Int. Cl.³ H01J *29/50, 29/56, 29/76*
U.S. Cl. 313—413 **6 Claims**

1. In an in line type electron gun structure for a color picture tube wherein electron guns respectively comprise a cathode, a pre-focus lens member including first, second, and third electrodes arranged successively in alignment with and opposite to the cathode and forming a pre-focus lens when a predetermined voltage is applied to these electrodes, and a main lens member forming a main lens when a predetermined voltage is applied to the third electrode and additional electrodes, the first to third electrodes of respective electron guns having apertures arranged on the same plane for passing the electron beam, the improvement wherein at least one set of corresponding electrodes of the respective electron guns of the first to



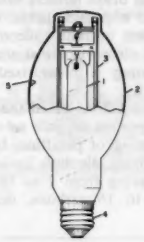
third electrodes forming the pre-focus lens have each a rectangular aperture having corners in the directions of the horizontal and vertical deflection magnetic fields.

4,241,276

WARM COLOR ARC DISCHARGE LAMP HAVING IMPROVED EFFICIENCY

Elliot F. Wyner, Peabody, Mass., and Alan J. Daignault, Londonderry, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,353
Int. Cl.³ H01J *61/44*
U.S. Cl. 313—487 **2 Claims**



1. A high pressure arc discharge lamp comprising a mercury-containing arc tube disposed within an outer jacket, the outer jacket having a phosphor coating on the inner wall thereof, the phosphor coating comprising about 35 to 40% of cerium activated yttrium aluminate and 60 to 65% of europium activated yttrium vanadate.

4,241,277

LED DISPLAY PANEL HAVING BUS CONDUCTORS ON FLEXIBLE SUPPORT

William Hintze, Camp Hill, and Albert Shirk, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

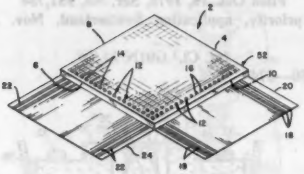
Filed Mar. 1, 1979, Ser. No. 16,576
Int. Cl.³ H01L *23/30, 23/48, 33/00*
U.S. Cl. 313—500 **11 Claims**

1. A flat panel display device of the type comprising a multiplicity of LED's and first and second bus conductors, said LED's being arranged in parallel side-by-side rows and parallel side-by-side columns, said columns extending normally of said rows, said columns and said rows defining a grid pattern, said first bus conductors extending parallel to said rows with one first bus conductor adjacent to each row, said second bus

conductors extending parallel to said columns with one second bus conductor adjacent to each of said columns, each of said LED's being electrically connected to one of said first bus conductors and to one of said second bus conductors at a crossing point of said bus conductors, said display device being characterized in that:

said first and second bus conductors are on the oppositely facing first and second surfaces of a flexible insulating film, said film having openings therein which are located on said grid pattern, said openings being between adjacent first bus conductors and between adjacent second bus conductors,

each of said LED's being inserted into one of said openings,



each of said LED's being connected to one of said first bus conductors and one of said second bus conductors by first and second tap conductors, each of said first and second tap conductors extending laterally from said one first and said one second bus conductor respectively at a location adjacent to said crossing point of said one first and said one second bus conductor, each of said second tap conductors having a via conductor extending through said film from said second surface to said first surface, each of said tap conductors having a terminal portion on said first surface, said terminal portions being immediately adjacent to said openings.

4,241,278

INDICATOR DEVICE WITH VACUUM FLUORESCENCE ELEMENTS

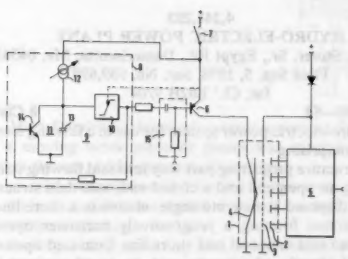
Henry Walther, Wiesbaden-Nordenstadt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,618

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804924

Int. Cl.³ H05B *41/38*

U.S. Cl. 315—106 **10 Claims**



1. In an indicator device with vacuum fluorescence elements controlled by a driving circuit, the heaters of the elements lying in a heating circuit and adapted to be applied with a dc operating voltage, the improvement wherein

the heating circuit contains a switch,

a clock generator means for triggering said switch so as to provide a pulsed heating current in the heating circuit and for selecting the clock pulse frequency and the pulse duty factor of control signal pulses thereof such that the effective value of the pulsed heating current is at least approximately equal to the dc heating current in compliance with the elements.

4,241,279

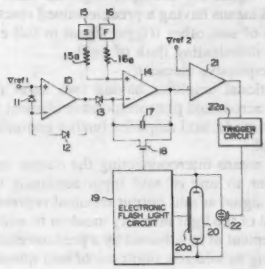
CONTROL CIRCUIT FOR AN AUTOMATIC ELECTRONIC FLASH LIGHT DEVICE

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 9, 1979, Ser. No. 10,691

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—151 **1 Claim**

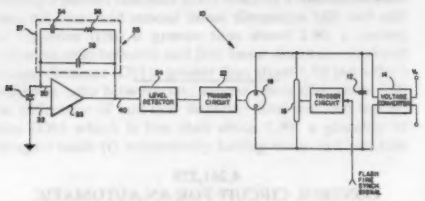


1. A control circuit for an automatic electronic flashlight device for a photographic camera in which an electric discharge of a flashlight tube is terminated when the amount of light received by a photosensor in the camera from an object to be photographed and illuminated by the light emitted by the flashlight tube reaches a predetermined level, said control circuit comprising; a light measuring circuit for measuring the amount of light received by said photosensor, said light measuring circuit including a first operational amplifier having an output and a first feedback circuit, a first diode in said first feedback circuit for long-compressing the output of said light measuring circuit, an operational circuit having a log-expanding circuit including a second diode and an operational amplifier with one input operatively connected to the output of said operational amplifier log-compressed by said first diode in said feedback circuit, film speed information input means having an output connected to the other input of said second operational amplifier, aperture size information means having an output also connected to said other input of said second operational amplifier, said second operational amplifier having a second feedback circuit, a capacitor provided in said second feedback circuit, a switching element in parallel with said capacitor and operatively connected to said flashlight device, and a comparing circuit for comparing the output of said second operational amplifier and second feedback circuit with a reference voltage and for giving an output for terminating the electric discharge of said flashlight tube when the level of the last-mentioned output equals that of said reference voltage.

4,241,280
LIGHT INTEGRATOR CIRCUIT WITH BUILT-IN ANTICIPATION

Joseph J. Abbadessa, Westwood, and Bruce K. Johnson, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 25, 1979, Ser. No. 51,681
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 **16 Claims**

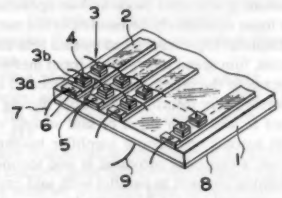


13. A quench strobe comprising:
a flash tube;
circuit means responsive to an applied trigger signal for effecting a discharge of current through said flash tube to produce an illuminating flash of light;
quench means responsive to another subsequently applied trigger signal for extinguishing said flash of light, said quench means having a predetermined reaction time from receipt of said other trigger signal to full extinguishment of said illuminating flash of light;
a photoresponsive element;
an operational amplifier having two input terminals connected across said photoresponsive element to operate in a current mode, said amplifier further comprising an output terminal;
feedback means interconnecting the output terminal of said amplifier to one of said input terminals to provide an output signal at said output terminal representative of the integral of the light intensity incident to said photoresponsive element as anticipated by a predetermined time corresponding to said reaction time of said quench means; and
level detecting means responsive to said output terminal reaching a select level for providing said other trigger signal.

4,241,281
LIGHT EMITTING DIODE DISPLAY DEVICE

Kiyoshi Morimoto, and Hiroshi Watanabe, both of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Jan. 18, 1979, Ser. No. 4,536
Claims priority, application Japan, Jan. 31, 1978, 53-8807
Int. Cl.³ H01L *33/00*
U.S. Cl. 315—161 **5 Claims**

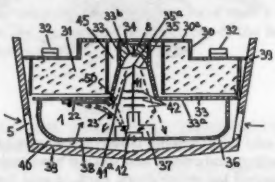


1. A light emitting diode display device which comprises a substrate having a predetermined conductivity type, first electrodes each consisting of a semiconductor region formed in a predetermined region on a surface of said substrate and having a conductivity type opposite to that of said substrate, first semiconductor films formed on said first electrodes and having the same conductivity type as said first electrodes, second semiconductor films formed on said first semiconductor films and forming P-N junctions with said first semiconductor films respectively so as to form a plurality of light emitting diode elements isolated from one another, and second electrodes formed on said second semiconductor films respectively.

4,241,282
SMOKE DETECTOR WITH BIMETALLIC ELEMENT FOR TEMPERATURE COMPENSATION

Erwin Tresch, and Jürg Muggli, both of Männedorf, Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Oct. 16, 1978, Ser. No. 951,784
Claims priority, application Switzerland, Nov. 21, 1977, 14117/77
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—574 **10 Claims**



1. A smoke detector comprising:
a radiation source for transmitting radiation to a predetermined radiation region having an extended solid angle region;
at least one radiation receiver arranged externally of a direct radiation region of the radiation source for receiving radiation scattered by smoke particles in the predetermined radiation region;
a bimetallic element structured and arranged so that in the presence of a temperature increase it gradually moves into a fraction of the radiation region and gradually increases the irradiation of the radiation receiver as a function of the temperature owing to at least any one of reflection or scattering of radiation at the surface of the bimetallic element which extends into the fraction of the radiation region, to thereby at least compensate over a predetermined temperature range lying between normal room temperature and a predetermined critical temperature the sensitivity decrease of the smoke detector with increasing temperature.

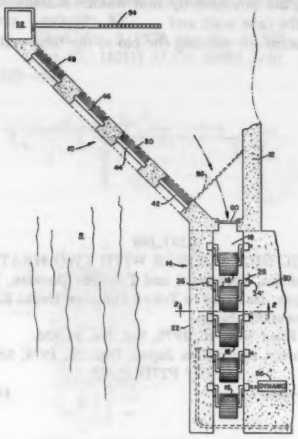
4,241,283
HYDRO-ELECTRIC POWER PLANT

Richard R. Storer, Sr., Egypt Rd., Damariscotta, Me. 04543

Filed Sep. 5, 1978, Ser. No. 939,698
Int. Cl.³ E02B *9/04*
U.S. Cl. 290—54 **8 Claims**

1. A hydro-electric power system for use in a flowing stream of water comprising
a dam structure projecting part way into said flowing stream having an open end and a closed end, said dam structure being disposed at an acute angle relative to a shore line of said stream forming a progressively narrower opening between said dam and said shore line from said open end to said closed end whereby said open end projects into said flowing stream to receive and collect water causing it to flow between said dam and said shore line directed from said open end of said dam to said closed end; and
means for generating power including a spillway connected to the closed end of said diversion dam in fluid communi-

cation with said water collected by said dam whereby water flows in said spillway, at least one water driven wheel positioned in said spillway adapted to be turned by



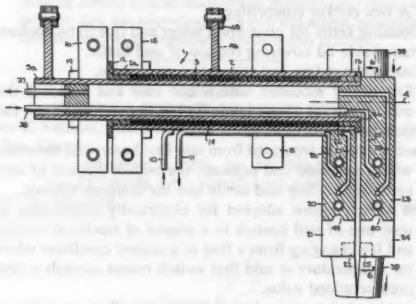
said water flow in said spillway, turbine-generator means for producing power and driving means connected between said water wheel and said turbine generator means to drive the same.

4,241,284

ELECTRICAL CONTACT APPARATUS FOR HIGH FREQUENCY WELDING

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corporation, Stamford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,286
Int. Cl.³ B23K *11/00, 31/06*
U.S. Cl. 219—61.2 **18 Claims**



1. High frequency electrical contact apparatus for contacting a moving work piece or pieces and supplying electric current thereto, said apparatus comprising:

a co-axial transmission line having an outer conductor and an inner conductor co-axial with and insulated from said outer conductor;

mounting means mounting said outer conductor and said inner conductor for movement of each independently of the other without a change of their coaxial relation;

first conductive contact means conductively secured to said outer conductor at an end thereof and movable therewith;

second conductive contact means conductively secured to said inner conductor at an end thereof adjacent said end of said outer conductor, said second contact means being movable with said inner conductor;

first and second biassing means connected respectively to said outer conductor and said inner conductor and urging each of them in a direction which will move said first and said second contact means toward a work piece or pieces; and

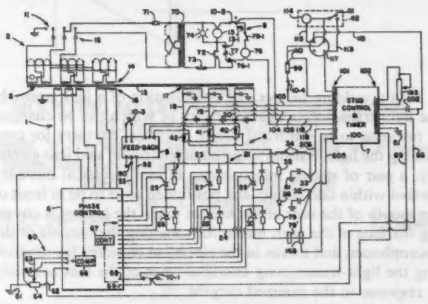
current supplying means at portions of said inner and outer conductor spaced from said end of said outer conductor and said end of said inner conductor in a direction axially of said outer conductor for supplying current to said inner and outer conductors.

4,241,285

POWER SUPPLY FOR SMAW WELDING AND STUD WELDING

Kenneth A. Golonka, Sr., Richmond Heights, and Gary Spiegelberg, Lagrange, both of Ohio, assignors to Erico Products, Inc., Cleveland, Ohio

Filed Jun. 29, 1978, Ser. No. 920,397
Int. Cl.³ B23K *9/09*
U.S. Cl. 219—130.32 **39 Claims**



1. A combination power supply for use in continuous type welding and in stud welding a wide range of stud sizes, comprising

means for producing output electrical power for substantially continuous type welding and for stud welding, including

phase controlled energy conversion means for converting AC input power to a DC welding signal, said energy conversion means having a normal power output capability rating for such continuous type welding and for stud welding studs of relatively small size,

feed-back means for producing a feed-back signal proportionally representative of such welding signal,

reference means for producing a reference signal, comparison means for making a comparison of such feedback and reference signals to provide a control for said energy conversion means,

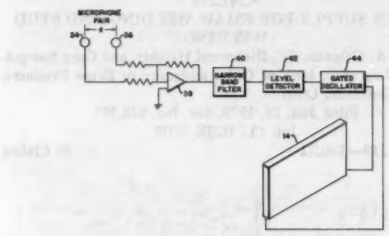
selectively operable control means for increasing the power output capability of said energy conversion means beyond such normal rating to one suitable for stud welding studs of a wide range of stud sizes including relatively large size studs ordinarily not able to be stud welded at such normal rating, including

selectively operable sequencing means for controlling a timed sequence of operation of said means for producing output electrical power to produce the same at such increased capability for a relatively short term timed duration suitable for stud welding, and

selectively operable mode changing means for changing the mode of operation of the power supply from substantially continuous type operation to increase output power capability timed operation with said control means and sequencing means for stud welding, said mode changing

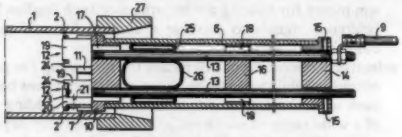
means comprising means for altering the comparison ratio of such feed-back signal and such reference signal, to permit increased conduction angles in said energy conversion means beyond those normally employed during such substantially continuous type operation.

4,241,286
WELDING HELMET LENS ASSEMBLY
Mack Gordon, 2905 Solon Rd., Cleveland, Ohio 44139
Filed Jan. 4, 1979, Ser. No. 867
Int. Cl.³ B23K *9/32*; A61F *9/06*; G02F *1/13*
U.S. Cl. 219—147 **6 Claims**



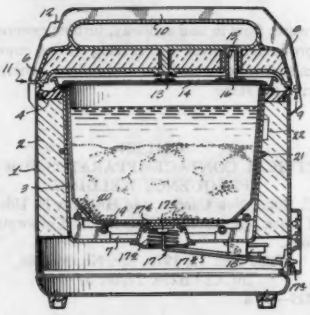
1. In a welding helmet, the combination of a lens assembly the light-transmitting characteristics of which can be changed in response to an electrical signal, electrical circuitry for controlling the light-transmitting characteristics of said lens assembly, a pair of spaced microphones in said electrical circuitry carried within said helmet and positioned so as to be in front of the mouth of the user of the helmet when the helmet is covering the face of the user, means for summing the outputs of the microphones, and means in the electrical circuitry for controlling the light-transmitting characteristics of the lens assembly in response to the summed outputs.

4,241,287
APPARATUS FOR WELDING PINS TO A TUBE INTERIOR
Bertil H. Sjöholm, Ronneby, Sweden, assignor to Gotaverken Anteknik AB, Gothenburg, Sweden
Filed Oct. 4, 1978, Ser. No. 948,482
Claims priority, application Sweden, Oct. 27, 1977, 7712118
Int. Cl.³ B23K *9/20, 9/32*
U.S. Cl. 219—161 **18 Claims**



1. Apparatus for manufacturing tubes with pins welded on the inside thereof comprising:
at least one holder for detachably holding a pin to be welded;
elongated holder support means for supporting said holder;
tube support means for supporting the tube in axial alignment with said holder and said holder support means;
drive means for moving said tube support means and said holder support means relative to one another so that said holder can be inserted in or retracted from the tube;
pressing means located along said holder support means for pressing the pin held by said holder radially outwards against the tube wall; and
welding means for welding the pin to the tube wall.

4,241,288
ELECTRIC RICE COOKER WITH TWO HEATERS
Terutaka Aoshima, Toyohashi, and Tokihiko Ikemizu, Kasugai, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 16, 1979, Ser. No. 94,936
Claims priority, application Japan, Dec. 28, 1978, 53-182217
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—441 **14 Claims**



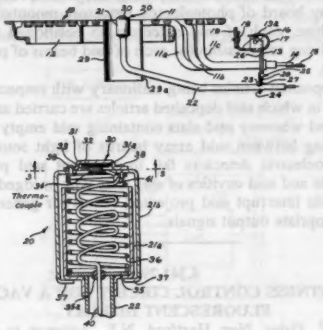
1. A rice cooker comprising:
a cooking kettle for containing water and rice to be cooked,
a removable lid covering the top of said kettle,
a case surrounding and supporting said kettle,
a first heater mounted within said case and adjacent the outside surface of said kettle for heating said kettle and the contents thereof,
a second heater separated from said first heater and mounted within said case and adjacent the outside surface of said kettle for heating said kettle and the contents thereof,
first switch means adapted for electrically connecting at least one of said heaters to a source of electrical energy and for changing from a first to a second condition when the temperature at said first switch means exceeds a first predetermined value,
second switch means adapted for electrically connecting at least one of said heaters to a source of electrical energy and for changing from a first to a second condition when the temperature at said second switch means exceeds a second predetermined value, and
means for connecting said first and second switch means to said first and second heaters so that, until said first switch means changes from said first to said second condition, the total heat produced by said first and second heaters is at a first rate and thereafter the total heat produced is at a greater rate and, when said second switch means changes from said first to said second condition, the total heat produced by said first and second heaters is at a rate less than said greater rate.

4,241,289

HEAT SENSING APPARATUS FOR AN ELECTRIC RANGE AUTOMATIC SURFACE UNIT CONTROL

Teamus Bowling, Fera Creek, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 2, 1979, Ser. No. 16,996
Int. Cl.[3] H01H *37/04*; H05B *3/68*
U.S. Cl. 219—450 **9 Claims**



1. Heat sensing apparatus for an automatic surface unit control of an electric range comprising:

a housing having an upper end portion adapted for contact with the bottom of a cooking utensil when placed on a surface unit;

housing support means for holding the housing within the surface unit and for biasing it upwardly to assure contact of said upper end portion with the utensil bottom;

said housing upper end portion comprising a first utensil contact layer of low thermal mass, heat conductive material, a second layer of electrically insulative, heat conductive material secured to the underside of the first contact layer, and a third layer of electrically conductive, heat conductive material secured to the underside of the second insulative layer;

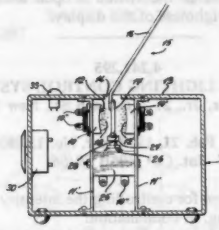
and heat responsive means attached to said third layer for sensing utensil heat as transmitted through said upper end portion and for providing an electrical signal representative thereof to an automatic surface unit control.

4,241,290

CLINICAL MIRROR HEATING DEVICE

Roy E. Folland, R.R. 1 S. Beech Ridge Rd., Clarenceville, Quebec, Canada

Filed Oct. 6, 1978, Ser. No. 949,258
Int. Cl.[3] H05B *1/02*; H01H *3/16*; F26B *19/00*
U.S. Cl. 219—518 **2 Claims**



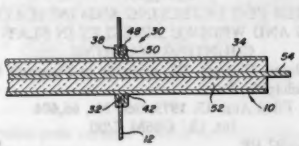
1. An electrical heater device for heating a clinical mirror, said device comprising a housing having top, bottom and side walls to define a hollow enclosure; two spiral coiled electric heating elements secured in said housing with their heat radiating surface spaced apart and facing each other in juxtaposition to provide concentrated heat in a mirror locating space therebetween, an opening in said top wall in alignment with said mirror locating space through which said mirror can be inserted into said mirror locating space, a switch positioned in alignment with said mirror locating space below said heating elements, said switch having an activating contact on an upper face thereof located in alignment with said opening in said top wall and said mirror locating space for activation by a clinical mirror when the mirror element of such is inserted into said mirror locating space, said activating contact having a centering element shaped to position and maintain the mirror element of the clinical mirror in centered alignment between and with the heat radiating surfaces of said electric heating elements in said mirror locating space, and electrical connections for connecting said heating elements and switch to a current source for energization of said heating elements when said switch is activated by engagement of the activating contact by the mirror element of the clinical mirror inserted through the opening in said top wall.

4,241,291

MOUNTING MEANS FOR SHEATHED HEATING ELEMENTS AND METHOD

Donald W. Carnes, Cockeysville, Md., assignor to Electro-Therm, Inc., Laurel, Md.

Filed Mar. 9, 1979, Ser. No. 19,120
Int. Cl.[3] H05B *3/06*
U.S. Cl. 219—536 **8 Claims**



1. A mounting assembly for securing a sheathed metallic heating element to a metallic bracket having an aperture therein comprising in combination:

a sheathed metallic heating element including a linear portion disposed within the aperture of said bracket,

a tubular metallic insert of relatively thin material disposed within the aperture of said bracket and in surrounding relation to said heating element linear portion,

said insert including integrally therewith:

an annular radial flange at one extremity thereof disposed in snug axial relation and in direct contact with one side of said bracket adjacent said aperture;

an axially extending tubular portion in surrounding concentric relation to said heating element,

a radially outwardly extending flange-like portion disposed in snug axial relation and in direct contact with the other side of said bracket adjacent said aperture thereby to axially grip the bracket therebetween,

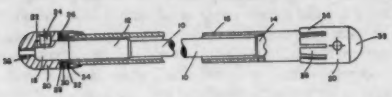
said flange-like portion merging into an axially adjacent reversely extending radially inwardly directed terminal flange in snug axial relation and in direct contact with said flange-like portion,

said terminal flange at its radially inner extremity defining an opening of lesser effective diameter than said insert tubular portion thereby to mechanically engage the periphery of said sheathed heating element and secure the bracket thereto.

4,241,292
RESISTIVE HEATER

John R. Kreick, and Glenn A. Anderson, Sr., both of Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 20, 1978, Ser. No. 953,244
Int. Cl.³ H05B 3/08
U.S. Cl. 219—541 3 Claims

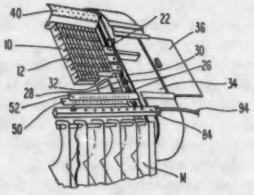


1. A resistive heater, comprising:
an emitter for radiating infrared energy;
a protective tube surrounding said emitter which will pass such infrared energy; and
electrical contact means accommodating said emitter and said protective tube, including means for compensating for the difference in expansion and contraction of said emitter and said protective tube during heating and cooling, said electrical contact means including an electrical contact having an internal shoulder, means for rigidly attaching said emitter to said electrical contact, and means for flexibly coupling said protective tube to said electrical contact with no fixed connection between said protective tube and said electrical contact, said flexible coupling means including at least one deflectable member arranged intermediate said internal shoulder and said protective tube.

4,241,293
SCANNER FOR DETECTING AND INDICATING MISSING AND WEDGED ARTICLES IN SLAT-TYPE COUNTING MACHINE

Charles F. Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 15, 1979, Ser. No. 66,604
Int. Cl.³ G06M 7/00
U.S. Cl. 235—92 PK 8 Claims

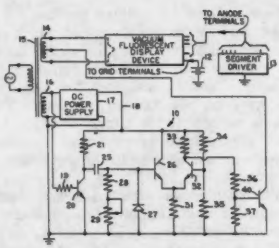


1. In an article counting machine having a series of elongated slats, means supporting said slats for movement in a closed path in a direction transverse to direction of slat elongation, each of said slats having a depth and an outer surface, said outer surface including at least a row of spaced aligned cavities along its length, said path including cavity charging and article discharging stations and a slat return station after said discharging station, means at said charging station for depositing an article in each of said cavities, means to gradually invert the slats for discharging said deposited articles for counting at said discharging station, the improvement to said machine and to a scanner in combination therewith for sensing, detecting and indicating
(a) empty cavities prior to discharging of said deposited articles and
(b) wedged articles in said cavities subsequent to discharging of said deposited articles and prior to said charging station, said improvement comprising
a hole provided through each of said cavities penetrating said slat depth, said holes being aligned with direction of travel of said slat movement,
an array board of light sources mounted to said machine, each of said light sources so positioned to project a beam of light simultaneously through a respective hole provided in said cavities comprising one of said rows,
an array board of photoelectric detectors mounted to said machine, each of said detectors so positioned to be in receiving relationship for each of said beams of projected light,
said deposited articles being stationary with respect to said slats in which said deposited articles are carried and transported whereby said slats containing said empty cavities passing between said array boards of light sources and photoelectric detectors fail to interrupt said projected beams and said cavities of said slats with wedged articles therein interrupt said projected beams for generation of appropriate output signals.

4,241,294
BRIGHTNESS CONTROL CIRCUIT FOR A VACUUM FLUORESCENT DISPLAY

Charles F. Fisler, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,544
Int. Cl.³ H05B 37/02, 41/39; G05F 1/00
U.S. Cl. 315—291 10 Claims



1. A circuit for controlling the brightness of a vacuum fluorescent display having filament terminals and connected to anode biasing means, comprising:
(a) a source of power electrically connected to the filament terminals of the display;
(b) an electronic switch connected between the source and the anode biasing means; and
(c) means for periodically opening and closing the switch, the ratio of time during which the switch is closed to the time during which the switch is open being variable to control the brightness of the display.

4,241,295
DIGITAL LIGHTING CONTROL SYSTEM

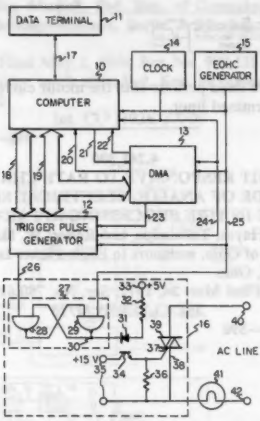
Walter E. Williams, Jr., 21 Woodland St., New Haven, Conn. 06511

Filed Feb. 21, 1979, Ser. No. 13,080
Int. Cl.³ H05B 39/08
U.S. Cl. 315—294 10 Claims

1. A circuit system for controlling the intensity of a plurality of lights comprising, in combination:
a means for producing a binary coded intensity indicating signal for each channel indicating the desired intensity for said channel,
a means for communicating said binary coded intensity indicating signal from said production means to a trigger pulse generator means,

one or more trigger pulse generator means disposed to receive said binary coded intensity indicating signal and produce during each half-cycle of the AC line voltage a trigger pulse signal for each channel the phase relation of which pulse signal to the AC line is a function of the said binary coded intensity indicating signal,

one or more means for producing a nonlinear binary timebase signal controlling the transfer characteristics of said trigger pulse generating means comprising a timebase clock, a memory means, an address counter and a timing counter connected such that the address counter sequen-



tially addresses the memory means and is incremented by a timing counter overflow and such that the timing counter reads data from the memory and counts the difference between the value of said data and a fixed value at a rate determined by a timebase clock and where the operation of said means is repeated for each half-cycle of the AC line,

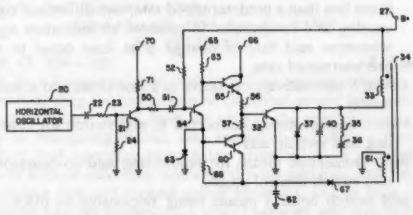
one or more thyristors connected so as to vary the power available to a lamp connected in series with said thyristor and the AC line in response to the varying of the phase relation to the AC line voltage of the trigger pulse signal applied to said thyristor.

4,241,296

HORIZONTAL DEFLECTION CIRCUIT INCLUDING PROTECTION FOR OUTPUT TRANSISTOR

Archie M. Barter, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 29, 1979, Ser. No. 43,280
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—397 **10 Claims**



1. A circuit for controllably turning a transistor on and off according to the presence or absence of a base drive signal, the circuit comprising:

a monostable multivibrator coupled to receive the base drive signal for producing an output pulse when the base drive signal is not received;

a first switchable current source coupled to an output of said monostable multivibrator for supplying current to turn on the transistor, said first switchable current source having its output connected to the base electrode of the transistor;

a second switchable current source coupled to an output of said monostable multivibrator for supplying current to turn off the transistor, said second switchable current source having its output connected to the base electrode of the transistor; and

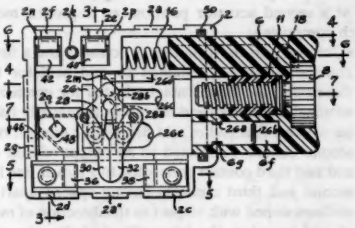
means for accurately and separately establishing said current to turn off the transistor and said current to turn on the transistor.

4,241,297

DOUBLE-POLE TRIGGER SPEED CONTROL SWITCH

Earl T. Piber, Oconomowoc, and Robert Pearson, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 20, 1978, Ser. No. 962,201
Int. Cl.³ H02P *5/16, 7/28*
U.S. Cl. 318—17 **12 Claims**



1. A double-pole variable control switch comprising:

an insulating housing;

a printed circuit board mounted in said housing;

a variable power control circuit connected to said printed circuit board;

a pair of screw-clamp power line terminals mounted in said housing and having stationary contacts connected respectively thereto;

a pair of movable contacts pivotally mounted at first portions thereof on said printed circuit board for outwardly swinging movement in opposite directions into engagement with the respective stationary contacts;

a cam follower member having a shuttle portion and a follower portion and actuator portions to which second portions of said movable contacts are pivotally connected;

a race in said housing for guiding said shuttle portion for reciprocal movement of said cam follower;

a spring-biased switch operator mounted in and extending from said housing for variable switch control movement;

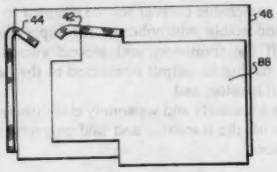
said switch operator comprising a cam responsive to said control movement for acting on said follower portion to cause said shuttle portion to traverse said race and to cause said actuator portions to swing said movable contacts so that third portions of the latter engage the respective stationary contacts, and being responsive to return movement of said switch operator for reopening said movable contacts to relatively large contact gaps;

and load terminals accessible through holes in said housing for connecting a load to said variable power control circuit.

4,241,298
SPEED CONTROL SWITCH

Harold L. Trammell, Jr., Hurst, and Jerry W. Swafford, Dallas, both of Tex., assignors to Teccor Electronics, Inc., Irving, Tex.

Filed Jan. 22, 1979, Ser. No. 5,329
Int. Cl.³ H02P 5/16
U.S. Cl. 318—17 11 Claims



1. In a compact electronic speed control for controlling the speed of a portable tool, of the type having a housing into which an actuator in reciprocally movable for selecting tool speed, said housing carrier electronic speed control circuitry of the half wave type operatively coupled to said actuator, and further carries mechanical switching means operatively coupled to said actuator for connecting power to said circuitry at a first actuator position and connecting power directly to said tool at a second actuator position, an improved mechanical switch comprising:

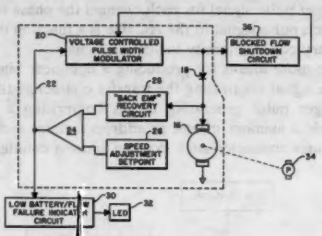
first, second and third stationary contacts and a first bridge contact operatively coupled to said acutator to move therewith, said first contact adapted for connection to a terminal of said tool and having a substantially flat surface on which a first end of said first bridge contact rides, said second contact connected to an output of said circuitry and said third contact connected to a power line lead, said second and third contacts having spaced apart contact surfaces sloped with respect to the direction of movement of said actuator, the intersection of the planes of said sloped contact surfaces forming an angle near 90°, and said first bridge contact having a second end for contacting said second and third stationary contacts, said second end having at least first and second contact surfaces for tangentially contacting the sloped surfaces of said second and third contacts at an intermediate actuator position and thereby adapted for making and breaking contact with said third contact in a direction approximately normal to said sloped surface of said third contact, said third contact further having a length sufficient that said bridge contact breaks contact with said third contact at a point spaced from the edges of said sloped surface.

4,241,299
CONTROL SYSTEM FOR BATTERY-OPERATED PUMP

Gregory A. Bertone, Monroeville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Apr. 6, 1979, Ser. No. 27,569
Int. Cl.³ H02P 3/08
U.S. Cl. 318—474 5 Claims

1. In a control system for a battery-operated motor, the combination of pulse width modulating means for supplying a pulsed voltage to said motor, means for generating a voltage proportional in magnitude to the speed of said motor, means for comparing said voltage with a reference speed signal to develop an error signal for controlling the width of the output voltage pulses from said pulse width modulator, and means for periodically removing power from said motor for a fixed period when current through the motor exceeds a predetermined limit, the power being periodically removed from the motor

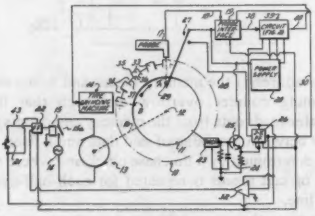


for successive fixed periods until the motor current falls below said predetermined limit.

4,241,300
CIRCUIT RESPONSIVE TO RATE CHANGE IN AMPLITUDE OF ANALOG ELECTRICAL SIGNAL FOR USE IN TIME PROCESSING APPARATUS

Richard H. Hayes, Tallmadge, and Robert W. Herrmann, Alliance, both of Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Mar. 24, 1977, Ser. No. 780,610
Int. Cl.³ G05B 11/18
U.S. Cl. 318—590 18 Claims



1. An electronic circuit for detecting an analog electrical signal having a rate of change in amplitude equal to or greater than a predetermined rate, comprising:

first connection means for connecting an analog electrical signal from an external source to a) circuit means having a time constant and to b) a first input of a comparator;

said circuit means being responsive in a first state to said analog electrical signal for inverting said analog electrical signal;

second connection means for connecting said inverted analog electrical signal from said circuit means to said first input of said comparator;

said time constant being effective to produce a difference signal at said first input of said comparator whenever the rate of change in amplitude of said analog electrical signal is not less than a predetermined rate, said difference signal causing said comparator to produce an indication signal whenever said rate of change is at least equal to said predetermined rate;

a switch alternatively operative in a first mode and a second mode;

switch control means connected to said switch for controlling said switch; and

third connection means for connecting said comparator to said switch control means;

said switch control means being responsive to place said switch in said first mode in the absence of said indication signal and being responsive to place said switch in said second mode in the presence of said indication signal;

said switch being operative in said first mode to cause said circuit means to assume said first state for inverting said analog electrical signal;

said switch being operative in said second mode to cause said circuit means to assume a second state for storing the amplitude of said analog electrical signal at the time said indication signal is produced.

4,241,301

CIRCUIT ARRANGEMENT FOR THE GENERATION OF STEPPING PULSES FOR THE ACCELERATION OF A STEPPER MOTOR

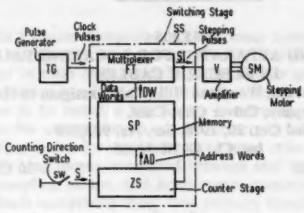
Dietmar Pohlig, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,115

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721240

Int. Cl.³ H02K *37/00*

U.S. Cl. 318—696 **8 Claims**



1. A circuit arrangement for the generation of stepping pulses for the acceleration of a stepper motor having a shaft, comprising: a pulse generator means for generating clock pulses; an amplifier means having an input connected to the stepping pulses and an output connected to the stepper motor and which outputs voltages in accordance with the stepping pulses; a switching stage means which receives said clock pulses and provides said stepping pulses, said switching stage means initiating at the start of the acceleration as stepping pulses starter pulses which bring the stepping motor to a substantially optimum torque prior to any significant rotation of the stepper motor shaft relative to a rotation for a single step of the stepper motor, a plurality of acceleration control pulses of increasing repetition rate following the starter pulses, a repetition rate of the starter pulses being substantially greater than a repetition rate of directly following acceleration control pulses, and a plurality of constant repetition rate control pulses being provided after the completion of acceleration of the stepper motor.

4,241,302

CAPACITIVE BRAKING SWITCHING SYSTEM FOR HOME APPLIANCES WITH INDUCTION MOTOR DRIVE

Daniel R. Benjamin, North Tarrytown, N.Y., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Mar. 19, 1979, Ser. No. 22,040

Int. Cl.³ H02P *3/18*

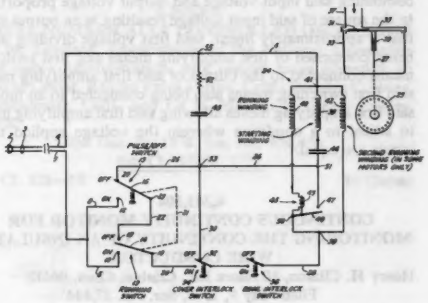
U.S. Cl. 318—758 **8 Claims**

1. In a home appliance such as a food processor having an electrical plug for connection to electrical power lines with a power cord extending from the plug to the appliance providing an energizing circuit, said appliance including a motor-driven tool operating in a region protected by a removable cover with an induction motor for driving said tool, said motor including first and second motor terminals, and at least one running winding connected in circuit between said terminals, a starting winding in series with a starting capacitor and starting means for temporarily connecting said starting capacitor and starting winding in series between said motor terminals for starting rotation of the motor rotor and for aiding in accelerating the rotor nearly to normal operating speed, said energizing circuit including a first power line connection extending between said plug and the first motor terminal and a second power line connection between said plug and the second motor terminal, said second power line connection including a cover interlock switch having a switch arm movable to an OFF position for interrupting said energizing circuit whenever the cover is removed from its normal position, the invention comprising:

a capacitive braking switching system for quickly braking the rotor whenever said energizing circuit is interrupted including:

a cover OFF terminal in said OFF-position of said cover interlock switch for engagement by said switch arm when said arm is in said OFF-position for placing said cover OFF terminal in conductive connection through said switch arm and through said second power connection with said second motor terminal,

a second capacitor connected in circuit between said cover OFF terminal and a connection point located intermediate said first power connection and one of the windings of said motor,



a first motor control switch including a first common terminal and first ON and first OFF terminals with a switch arm for selectively connecting one of the latter terminals with said first common terminal,

a second motor control switch including a second common terminal and second ON and second OFF terminals with a switch arm for selectively connecting one of the latter terminals with said second common terminal,

said first ON terminal and said second ON terminal each being connected through said second power connection with said plug,

said second OFF terminal being connected to said cover OFF terminal,

said first OFF terminal being connected to said second common terminal, and

said first common terminal being connected through said second power line connection including said cover interlock switch with said second motor terminal,

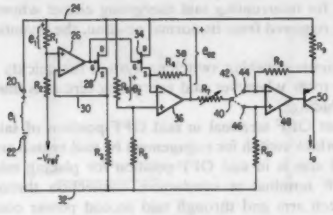
whereby neither said second capacitor nor said starting winding and starting capacitor can inadvertently be placed in circuit across the electrical power lines regardless of how said switches are operated, and whereby powerful, quick-acting braking action is provided whenever the induction motor is turned OFF either by removing the cover or by turning OFF both of said switches.

4,241,303

LINEARIZATION CIRCUIT

William L. Thompson, Chardon, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,012
Int. Cl.³ G01K *7/10*; G01R *15/10*
U.S. Cl. 323—19 **9 Claims**



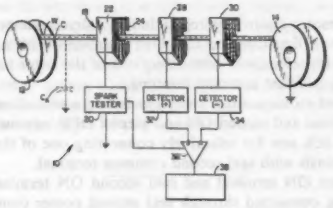
1. A voltage linearization circuit comprising a non-linear input voltage, first voltage dividing means across said input voltage, second voltage dividing means connected to said input voltage and coupled to said first voltage dividing means, said second voltage dividing means having an output voltage proportional to the square of said input voltage, and means for combining said input voltage and output voltage proportional to the square of said input voltage resulting in an output signal that is approximately linear, said first voltage dividing means being comprised of first amplifying means and first switching means connected to the output of said first amplifying means, said first switching means also being connected to an input of said first amplifying means allowing said first amplifying means to adjust to a condition wherein the voltage applied to its inputs are equal.

4,241,304

CONTINUOUS CONTINUITY MONITOR FOR MONITORING THE CONTINUITY OF AN INSULATED WIRE CONDUCTOR

Henry H. Clinton, 10 Shore Rd., Clinton, Conn. 06413

Filed May 9, 1979, Ser. No. 37,444
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **17 Claims**



1. Apparatus for monitoring the continuity of an electrically insulated wire having an electrical conductor comprising:

means for moving the insulated wire axially of itself along a path past a monitoring station;

first and second monitoring electrodes positioned adjacent the path and the wire at the monitoring staton, and located serially along the path, each electrode being reactively coupled respectively with the portion of the electrical conductor adjacent the electrodes;

excitation means positioned along said path for inducing an electrical excitation voltage at an excitation frequency in the electrical conductor of the monitored wire, the excitation means having a reactive coupling with the conductor at one side of the monitoring station whereby the excitation means and the first and second electrodes communicate with the conductor at serial positions along the monitored wire;

circuit completing means electrically connecting the excitation means with the conductor at the opposite side of the monitoring station from said reactive coupling independently of the coupling and the portion of the conductor at the monitoring station for establishing a complete electrical circuit from the excitation means through the portion of the conductor adjacent the two monitoring electrodes and producing a detectable voltage at the excitation frequency on the conductor portion at the monitoring station when continuity exists; and

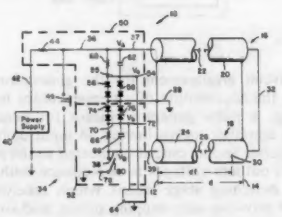
detector means connected with the two monitoring electrodes for detecting different electrical voltages at the excitation frequency in the electrical conductor portions adjacent the respective first and second electrodes in the presence of a continuity break in the portion of the conductor between the first and second electrodes.

4,241,305

METHOD AND APPARATUS FOR LOCATING FAULTS IN ELECTRIC CABLES

Arthur F. Dickerson, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 20, 1978, Ser. No. 953,289
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **20 Claims**



1. An apparatus for locating a fault in a subsurface electrical cable having a conductor having first and second terminals, said apparatus comprising:

means for providing a loop in the cable so that said first and second terminals are adjacent each other and the cable is electrically continuous between said first and second terminals;

a spark gap for connection to said second terminal;

power supply means for connection to said first terminal; and

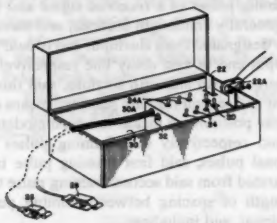
time measuring means positioned at said adjacent first and second terminals and connected to both said first and second terminals for measuring the time interval between forward moving wavefronts arriving at said adjacent first and second terminals so that as said power supply means charges up said conductor and said spark gap breaks down to send a forward wave through the conductor, the time of arrival of said forward wave is detected and measured at said adjacent second and first terminals and when the power supply charges the conductor so that the fault breaks down to generate a forward wave in both directions through the conductor, said time measuring means measures the time interval between arrival of the forward wave at said adjacent first and second terminals so that the position of the fault along the first and second terminals so that the fractional position of the fault along the conductor can be calculated without knowing propagation velocity.

4,241,306

TEST FIXTURE HAVING SWITCHING MEANS FOR FACILITATING TRANSFORMER TURNS RATIO TESTING

Russell E. Bump, 3946 E. Meadowbrook, Phoenix, Ariz. 85018

Filed Aug. 29, 1978, Ser. No. 937,783
Int. Cl.[3] G01R 29/20
U.S. Cl. 324—55 4 Claims



1. In a system comprising a transformer turns ratio test unit and a transformer having both primary and secondary windings to be ratio tested which system utilizes said transformer turns ratio test unit to perform turns ratio tests on said transformer to be tested, a test fixture comprising: input coupling means for connection to a transformer to be tested, output coupling means for connection to a turns ratio test unit,

switching means connected between said input and output coupling means, said input means comprising seven test leads comprising three wire primary transformer connection leads, and four double wire secondary transformer connection leads, each of said four double wire secondary transformer connection leads having a current wire and a potential wire,

said output coupling means comprising a pair of secondary output terminals for connection to the secondary test leads of said turns ratio test unit, said output coupling means further comprising a pair of primary output terminals for connection to the primary test leads of said turns ratio test unit.

said switching means further comprising three primary switching element means and three secondary switching element means,

said primary switching elment means effecting the selective electrical coupling of any two of three primary transformer connection leads to said primary output terminals.

said secondary switching element means effecting the selective electrical coupling of a common one of four of said secondary transformer connection leads and one of the other three secondary transformer connection leads to said pair of secondary output terminals.

4,241,307

MODULE INTERCONNECTION TESTING SCHEME

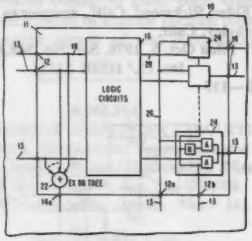
Se June Hong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,936
Int. Cl.[3] G01R 31/02, 31/28
U.S. Cl. 324—73 R 6 Claims

1. In an electronic circuit package in which a plurality of subassembly circuit packages with logic circuitry thereon are mounted on a insulative base with an interconnecting network for interconnecting the input and output terminals of the subassembly circuit packages with each other and with terminals of the electronic circuit package the improvement comprising:

a separate Exclusive-OR circuit tree means included in each of the subassembly circuit packages, which is connected to the input terminals of that subassembly circuit package in which it is included to test connections to output terminals of the subassembly packages;

half select input circuit means on each of subassembly packages for coupling the output terminals of the subassembly packages to a test input terminal of the subassembly package for application of test signals to the output terminals of the subassembly packages while the output of said logic circuits are ungated from said output terminals and;



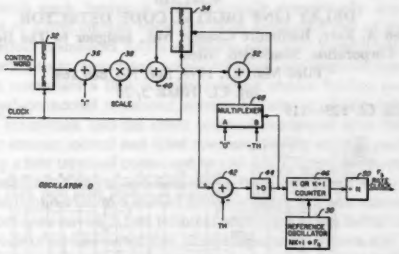
circuit means on said base for activating said masking circuits and supplying said test signals to the test input terminals of said subassembly packages whereby the network of the electronic circuit package can be tested with simple binary signal combinations.

4,241,308

DIGITAL NUMERICALLY CONTROLLED OSCILLATOR

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Alfred Cellier, Rancho Palos Verdes, Calif.; Douglas C. Huey, Westminster, Calif., and Lit N. Ma, Palos Verdes Estates, Calif.

Filed Dec. 29, 1978, Ser. No. 974,475
Int. Cl.[3] H03K 5/26
U.S. Cl. 328—55 16 Claims



1. A digital numerically controlled oscillator for controlling the frequency and phase of an output signal in response to an input control word, comprising:

(a) means for translating the input control word to a single algebraic sign;

(b) means for accumulating the translated input control word;

(c) means for sensing when a threshold amount is achieved in said means for accumulating;

(d) means for forming a reference clock signal having a frequency at an integer multiple of the desired frequency of the output signal, and

(e) means responsive to said means of or sensing for adjusting the frequency and phase of the output signal in a single direction in response to the translated control word, said means including:

(1) means for dividing the frequency of the reference clock signal by a first integer; and

(2) means for dividing the frequency of the reference

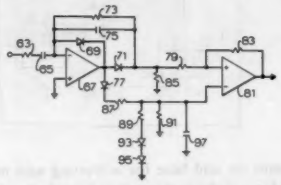
clock signal by an integer different from said first integer in response to said means for sensing.

4,241,309

SYNCHRONIZING METHOD AND APPARATUS

William L. Elder, Richmond, Calif., assignor to Andros Incorporated, Berkeley, Calif.

Filed Oct. 5, 1978, Ser. No. 948,875
Int. Cl.³ H03K 5/153
U.S. Cl. 328—115 **8 Claims**



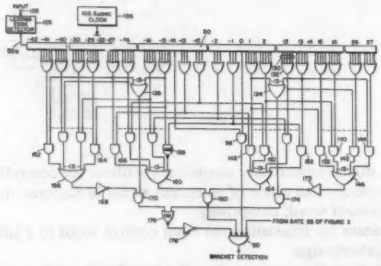
1. A method of developing a series of synchronizing pulses related to a series of input pulses of variable amplitude, comprising, developing a first signal having an amplitude which is proportional to the derivative of the rising or falling portion of each of of the input pulses, developing a second signal related to said first signal and having a minimum amplitude which is greater than the minimum amplitude of the first signal and having a decay characteristic slower than that of the first signal such that the amplitude of said second signal becomes equal to the amplitude of said first signal at a threshold point which is proportional to the amplitude of said first signal, and developing a series of synchronizing pulses each related to a respective threshold point, whereby the phase of the synchronizing pulses is independent of the amplitude of the input pulses.

4,241,310

DELAY LINE DIGITAL CODE DETECTOR

Leo A. Kerr, Baltimore County, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 23, 1978, Ser. No. 889,164
Int. Cl.³ H03K 5/26
U.S. Cl. 328—119 **7 Claims**



1. In a beacon target detector comprising a digital delay line having an input port for receiving a signal comprised of a series of pulses to be detected, the format of said received signal being first and second framing pulses separated by a known time and a predetermined plurality of informational pulse positions spaced at known intervals between said framing pulses, the presence or absence of informational pulses at said informational pulse positions being indicative of the informational content of said received signal, said digital delay line having a plurality of output tap means for determining the presence or absence of pulses at predetermined positions generally equally spaced along the length of said delay line, and a source of clock pulses, said clock pulses being applied to said digital delay line to cause pulses received at said input port to be traversed through said digital delay line, the pulse repetition frequency of said clock pulses having a relationship to the spacing of said framing pulses, said informational pulse positions and said plurality of output means whereby said informational pulses and framing pulses periodically are aligned with said output means, an improvement

wherein said digital delay line has a length equivalent to approximately five times the length of the spacing between framing pulses of a received signal and is divided into five generally equilength sections, said sections being arbitrarily designated from the input end of said delay line to the output end of said delay line respectively as first, second, third, fourth and fifth sections, said third section having first and second framing pulse tap means and information pulse position tap means to accommodate simultaneously and respectively said framing pulses and said informational pulses, said first framing pulse tap means being separated from said second framing pulse tap means by the length of spacing between framing pulses of a received signal, and including:

first gate means responsive to the occurrence of a pulse at any one of the output tap means of said second section for generating a first signal;

second gate means responsive to the simultaneous occurrence to pulses at tap means of said first and second sections separated by an amount equivalent to the time between said framing pulses for generating a second signal;

a bracket detection means responsive to the simultaneous occurrence of pulses at said first and second framing pulse tap means for sampling the informational pulse position tap means; and

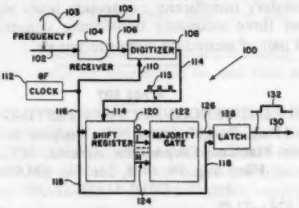
first inhibit means responsive to the occurrence of said first signal and the simultaneous non-occurrence of said second signal to generate a first inhibit signal, said bracket detection means being responsive to said first inibit signal to inhibit sampling of said information pulse position tap means.

4,241,311

DIGITAL MAJORITY NOISE FILTER FOR BI-LEVEL DATA RECEPTION

Raymond P. Massey, Raleigh, N.C., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Feb. 1, 1979, Ser. No. 8,750
Int. Cl.³ H03K 5/05, 13/32
U.S. Cl. 328—167 **12 Claims**



1. The method of filtering high frequency noise pulses from alternating analog data, of a selected frequency F, comprising the steps of:

(a) forming a bi-level or square wave signal from said analog data;

(b) providing a clock signal of a frequency of at least 8F;

(c) sampling said bi-level data at the frequency of said clock signal, and reading said sampled data at clock frequency into a digital shift register;

(d) reading out in parallel from said shift register a selected

number of sampled bits, and into a majority gate in selected polarity;

(e) applying the majority signal from said majority gate to a latch in synchronism with said clock signal,

whereby the output of said latch will be the digital majority noise filtered version of the input analog signal.

4,241,312

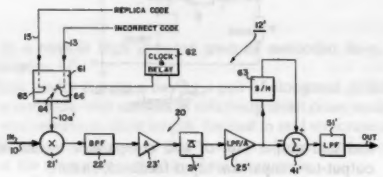
SELF-CALIBRATING THRESHOLD DETECTOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; James R. Barnes, Domingsez Hills, and Marshall Y. Huang, Rancho Palos Verdes, both of Calif.

Filed Jul. 27, 1979, Ser. No. 61,556

Int. Cl.³ H03K *13/01*; H04B *1/12*

U.S. Cl. 329—50 **6 Claims**



1. In a system for receiving an incoming signal modulated by a prescribed code, the combination comprising:

a. a correlator receiving said incoming code and successively cross-correlating same with a local replica of said incoming code and with an incorrect code, said correlator producing during one time interval a reference signal corresponding to the correlation with said incorrect code, and further producing during a successive time interval an output signal corresponding to the correlation with said replica code;

b. hold means holding a sample of said reference signal; and

c. comparator means comparing said sample reference signal with said output signal to provide a resultant difference signal indicative of said correlation with said replica code.

4,241,313

AUDIO POWER AMPLIFIER

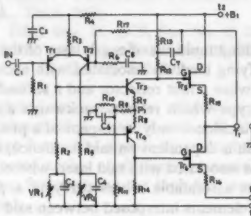
Takao Takehara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 409,586, Oct. 25, 1973, abandoned. This application Aug. 21, 1975, Ser. No. 606,425

Claims priority, application Japan, Oct. 27, 1972, 47-108345; Oct. 27, 1972, 47-124793[U]; Oct. 27, 1972, 47-124794[U]; Oct. 27, 1972, 47-124795[U]; Oct. 27, 1972, 47-124796[U]; Oct. 27, 1972, 47-124797[U]

Int. Cl.² H03F *3/16*

U.S. Cl. 330—253 **6 Claims**



1. An audio power amplifier comprising a first-stage voltage amplifier circuit of differential amplifier type including a pair of field-effect transistors for voltage amplifying an audio frequency signal, a second-stage voltage amplifier circuit including a field effect transistor for voltage amplifying the output signal from said first-stage voltage amplifier circuit, said second-stage voltage amplifier circuit also serving as a drive stage, and a last-stage power amplifier circuit including a pair of field-effect transistors having drain voltage versus drain current characteristics similar to static plate voltage versus plate current characteristics of a triode vacuum tube for power amplifying the output signals of said second-stage voltage amplifier circuit.

4,241,314

TRANSISTOR AMPLIFIER CIRCUITS

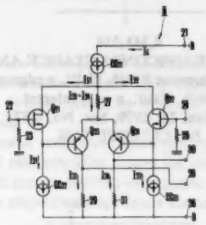
Masayuki Iwamatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 15, 1978, Ser. No. 960,908

Claims priority, application Japan, Nov. 24, 1977, 52-157546[U]

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—253 **2 Claims**



1. In a transistor amplifier circuit comprising a pair of field effect transistors in an input stage having gate electrodes respectively connected to input terminals, and a differential amplifier in a succeeding stage including a pair of bipolar transistors each having a base electrode respectively connected to a first current electrode of an associated one of the field effect transistors and a collector electrode respectively connected to an associated output terminal, the improvement which comprises a first constant current source having one terminal connected to second current electrodes of said field effect transistors, and the other terminal connected to a first power source; second and third constant current sources each having a first terminal connected to said first current electrode of an associated one of said field effect transistors, and a second terminal connected to a second power source; first and second resistors each having a first terminal connected to the collector electrode of an associated one of said bipolar transistors and a second terminal connected to said second source; a third resistor having a first terminal commonly connected to the emitter electrodes of said bipolar transistors and a second terminal connected to the junction between the second current electrodes of said field effect transistors and said first constant current source.

4,241,315

ADJUSTABLE CURRENT SOURCE

Raymond B. Patterson, III, and Grady M. Wood, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 23, 1979, Ser. No. 14,523

Int. Cl.³ H01L *27/24*; H03F *3/45*

U.S. Cl. 330—261 **17 Claims**

1. An adjustable current source comprising:

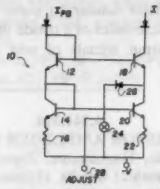
a first current path connected to a voltage supply terminal;

a second current path connected to said supply terminal substantially in parallel with said first current path;

a control electrode of a first and second transistor in said first and second current paths respectively being intercon-

nected to one of said current paths to form a current mirror; and

an amorphous material device in a part-on high impedance, substantially amorphous state electrically alterable to



lower part-on high impedance, substantially amorphous states connected to said supply terminal and forming a part of said second current path to adjust the impedance of said second current path and consequently the current through said second current path.

4,241,316

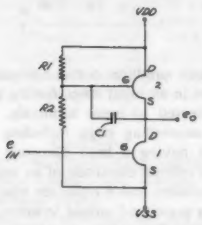
FIELD EFFECT TRANSCONDUCTANCE AMPLIFIERS

Richard P. Knapp, Hermosa Beach, Calif., assignor to Lawrence Kavanau, Long Beach, Calif., a part interest

Filed Jan. 18, 1979, Ser. No. 4,572

Int. Cl.³ H03F 3/16

U.S. Cl. 330—277 **39 Claims**



1. A field effect device amplifier comprising first and second field effect devices each having source, drain and gate connections, said gate of said first field effect device being coupled to the amplifier input, said drain of said first field effect device being coupled to said source of said second field effect device and to the amplifier output, said amplifier also having means for substantially shorting said gate of said second field effect device to its said source for the intended operating frequency range of said amplifier, said field effect devices being biased to operate in a partial carrier velocity limited region, selected to provide a dependence of the output conductance of said field effect devices on drain current which approximates that of the transconductance of said field effect devices.

4,241,317

FREQUENCY GENERATOR SUITABLE FOR USE AS POSITION-FREQUENCY TRANSDUCER

Wolfram Breitling, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 16, 1979, Ser. No. 12,801

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810347

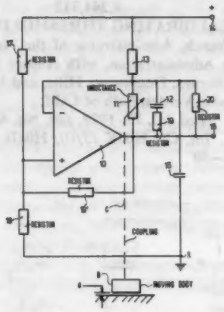
Int. Cl.³ H03K 3/023

U.S. Cl. 331—65 **9 Claims**

1. A frequency generator having electrical power supply terminals (14, R), one of which (R) forms a reference terminal; comparator means having a first (+) and a second (−) input and an output (16), said frequency generator further having means (17, 18) for applying a reference voltage to said first input of said comparator means, whereby said first input will form a reference input and said second input a comparison input;

the improvement comprising

a parallel tank circuit including an inductance (11) and a first capacitor (12) connected to said second input (−)



and said output (16) of said comparator means in an output-to-comparison input feedback circuit;

in combination with

a second capacitor (15) connected between the second input and hence said parallel circuit and the reference terminal (R).

4,241,318

FAST-SWITCHING MULTI-WAVELENGTH LASER

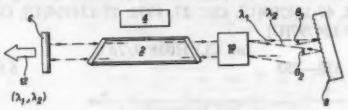
Jean Comera, Gieres, and Claude Jaussaud, Saint Martin d'Heres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 4, 1978, Ser. No. 948,564

Claims priority, application France, Oct. 4, 1977, 77 29774; Aug. 8, 1978, 78 23373

Int. Cl.³ H01S 3/10

U.S. Cl. 331—94.5 C **8 Claims**

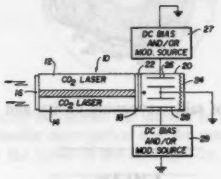


1. A fast-switching multi-wavelength laser of the type comprising an amplifying medium associated with exciting means and disposed between a first reflector and a second dispersive reflector of the type which reflects backwards a light beam having a certain incidence only in respect of a predetermined wavelength which is dependent on said incidence, and energy abstracting means associated with said laser, wherein said laser further comprises a rotatable wheel carrying a plurality of optical deflector elements interposed between said amplifying medium and said second dispersive reflector, and means for rotating said wheel to thereby place said elements periodically in the path of the light beam, said beam being thus deflected periodically, the incidence of the light beam on the dispersive reflector being then modified in a number of different values corresponding to the desired number of wavelengths.

4,241,319
DUAL CHANNEL WAVEGUIDE GAS LASER

Aristotle Papayoanou, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1979, Ser. No. 12,675
Int. Cl.³ H01S 3/10
U.S. Cl. 331—94.5 G 10 Claims



1. In a tunable high pressure gaseous molecular laser, the combination of:

a laser cavity structure having a pair of elongated dielectric waveguide laser cavities of relatively small cross sectional area relative to their length, formed in said structure so as to have respective end terminations adjacent one another at the same opposite ends of said structure;

first and second partially reflecting end mirrors respectively attached to said opposite ends forming common end mirrors for both said laser cavities;

a laser medium comprising a gaseous mixture in both said laser cavities and including means for exciting said medium to generate respective laser beams;

an external Stark cell positioned at one end of said cavity structure to receive simultaneously both said laser beams, said Stark cell being filled with gas and having a grating adapted to intercept said beams for permitting preselection of a predetermined laser line, said Stark cell being positioned between said one end and said grating and having two pairs of electrodes therein, said electrodes being positioned so that one electrode pair is adapted to effect the laser operation of one laser beam and the other electrode pair is adapted to effect laser operation of the other laser beam; and

means coupled to said pairs of electrodes for applying electrical control voltages independently thereto for applying respective DC bias thereto and when desirable, a modulation voltage.

4,241,320
CIRCUIT ARRANGEMENT FOR ESTABLISHING WEIGHTING COEFFICIENTS IN AN ANALOG-TYPE ADAPTIVE EQUALIZER

Alfredo Fausone, and Renato Rivelli, both of Turin, Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 23, 1979, Ser. No. 69,130
Claims priority, application Italy, Aug. 25, 1978, 68977 A/78
Int. Cl.³ H04B 3/14
U.S. Cl. 333—18 6 Claims

1. A weighting network for an adaptive equalizer inserted between a transmission channel and a load for processing incoming high-frequency signals by multiplying their amplitudes by selected analog coefficients, comprising:

input means for receiving the high-frequency signals to be processed;

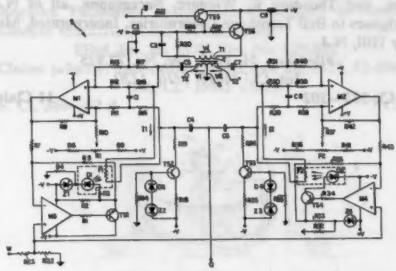
output means for emitting the processed high-frequency signals;

a control terminal for receiving a corrective voltage determining a selected analog coefficient;

a bridge circuit inserted between said input and output means, said bridge circuit including two impedance elements having an electrical resistance indirectly variable by an external energy field;

a source of constant reference current connected to each of said impedance elements for generating a voltage drop, proportional to said resistance, thereacross;

a pair of energy emitters respectively juxtaposed with said impedance elements;



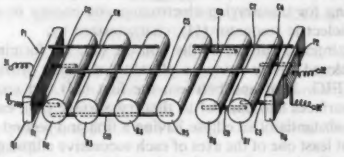
amplifier means connected to said terminal and across said energy emitters for differentially exciting same to unbalance said bridge circuit in response to said corrective voltage; and

feedback means connected between said impedance elements and said amplifier means for stabilizing the excitation of said energy emitters in response to the voltage drop across the respective impedance elements.

4,241,321
ELECTROMECHANICAL FILTER

Yoshihiko Kasai, Yokahama; Takashi Gounji, Kawasaki, and Yoshio Katsube, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 15, 1979, Ser. No. 12,390
Claims priority, application Japan, Feb. 15, 1978, 53/016259
Int. Cl.³ H03H 9/24, 9/50
U.S. Cl. 333—198 11 Claims



1. An electromechanical filter comprising:

(a) first and second transducers for transforming respectively an input electrical signal into a mechanical vibration and a mechanical vibration into an output electrical signal;

(b) a plurality of mechanical resonators arranged substantially parallel to each other in one plane;

(c) first and second mechanical couplers for coupling respectively said first transducer with one of said plurality of resonators and said second transducer with another of said plurality of resonators; and,

(d) a third mechanical coupler having a longitudinal resonance characteristic disposed substantially transverse to said plurality of resonators for coupling together in series at least three of said mechanical resonators, wherein a first portion of the third coupler's length formed between a first pair of connected resonators is between first and second oscillation modes of a bending mode resonance characteristic of the third coupler and a second portion of the third coupler's length formed between a second pair of

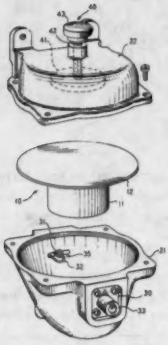
connected resonators is between second and third oscillation modes of the bending mode resonance characteristic.

4,241,322

COMPACT MICROWAVE FILTER WITH DIELECTRIC RESONATOR

Arlen K. Johnson, New Providence; Thomas P. Tignor, Mendham, and Theodore K. Wingard, Succasunna, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1979, Ser. No. 77,925
Int. Cl.³ H01P *7/10, 1/20*
U.S. Cl. 333—202 **11 Claims**



1. Apparatus adaptable for use as a microwave filter comprising a housing (21, 22) having an electrically conductive interior surface forming an enclosed cavity, the cavity extending from a substantially flat first surface (23) to a substantially flat second surface (24), a dielectric resonator (11) having planar surfaces parallel to the first (23) and second (24) surfaces of the cavity and positioned in predetermined spatial relationship in the cavity adapted to support a transverse electric mode of its resonance frequencies, and input (35 or 30) and output (30 or 35) terminal members extending from outside the housing (21, 22) into the cavity and being electrically insulated from the housing for transferring electromagnetic energy to and from the dielectric resonator (11), characterized by,

the interior surface of the housing (21, 22) forming an enclosed cavity having a plurality of planar cross sections (FIG. 3) at and between the first (23) and second (24) surfaces and parallel to the first surface (23), each being substantially an ellipse having a first and second axis, and at least one of the axes of each successive ellipse monotonically increasing in length with perpendicular distance from the first surface (23), the apparatus having substantially optimum electrical characteristics.

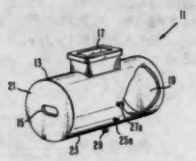
4,241,323

REFLECTIVE DUAL MODE FILTER

Edward L. Griffin, and Frederick A. Young, both of Huntington Beach, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 5, 1979, Ser. No. 55,109
Int. Cl.³ H01P *1/208, 7/06, 1/16*
U.S. Cl. 333—209 **11 Claims**

1. A reflective dual mode filter including at least one waveguide cavity resonating at its resonant frequency in a first and a second independent orthogonal mode, first coupling means in said cavity for intra cavity coupling of said first mode to said second mode, a reflective plate provided in said cavity, and a shunt port in a side wall and a coupling slot port in the other end wall of said cavity, the improvement wherein said first coupling means includes a pair of balanced coupling screws oriented about the axis of said cavity 90 degrees with respect to one another and 45 degrees with respect to a plane through the



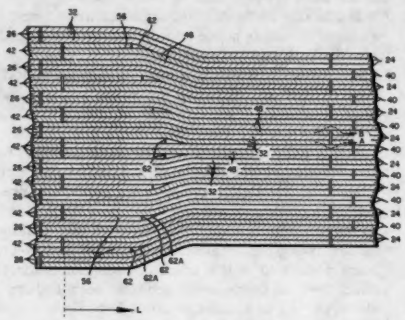
longitudinal axis of said waveguide cavity and through said shunt port.

4,241,324

MAGNETIC CORE FOR ELECTRICAL TRANSFORMERS

James D. Douglass, Pittsburgh, and Albert T. Chase, Bethel Park, both of Pa., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 28, 1979, Ser. No. 79,695
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—217 **7 Claims**



1. A transformer comprisng:

a magnetic core formed of a stacked array of laminations defining a magnetic flux path including first and second leg portions and first and second yoke portions;

a plurality of conductive coils encircling at least a part of said first leg portion;

a plurality of additional leg laminations, interleaved between selected ones of said stacked array laminations in at least a part of said second leg portion; and

a plurality of yoke spacer laminations interleaved between selected ones of said stacked array of laminations in direct correspondence to said interleaving of said additional leg laminations, to minimize voids created between said core laminations by said interleaving of said additional leg laminations, said yoke spacer laminations having a dimension orthogonal to said second leg portion which varies between a maximum at the approximate center of said stacked array and minima at the extremes of said stack.

4,241,325

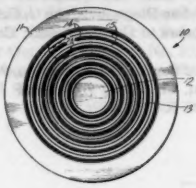
DISPLACEMENT SENSING TRANSDUCER

Mario Di Giovanni, Pacific Palisades, Calif., assignor to Micro Gage, Inc., El Monte, Calif.

Filed Mar. 21, 1979, Ser. No. 22,502
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—4 **15 Claims**

1. A displacement transducer comprising a rigid support, a flexible diaphragm having a uniform thickness, a periphery

attached to the support, and an interior free to deflect, and means for sensing strain on the diaphragm to measure its deflection, characterized in that the interior of the diaphragm has at least one annular corrugation and the sensing means is oriented to sense the strain of the corrugation.



4,241,326

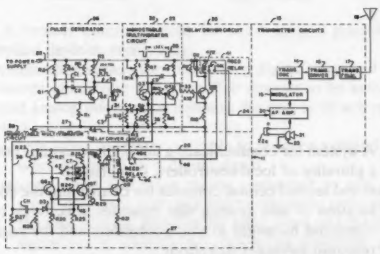
ELECTRONIC TRAFFIC CONTROL AND WARNING SYSTEM

William Odom, DuQuoin, Ill., assignor to Martin A. Odom, Murphysboro; Pauline B. Presley, Carbondale; Clark Vineyard, Carbondale and James D. Hagler, Murphysboro, all of, Ill., part interest to each

Filed Jan. 8, 1979, Ser. No. 1,728

Int. Cl.³ H04B 7/00

U.S. Cl. 340—33 **33 Claims**



1. An electronic system for traffic control and warning purposes comprising transmitting means within an authorized mobile unit including a frequency modulation transmitter for transmitting a frequency modulation carrier signal at a preselected frequency within a preselected police communications frequency band, said carrier signal being adapted to be selectively either voice or pulse modulated, a transmitting antenna for radiating said modulated carrier signal, voice modulation means for modulating said carrier signal with a voice message, pulse modulation means for selectively modulating said transmitted carrier signal with preselected pulse messages of preselected pulse patterns and receiving means within each of a plurality of civilian vehicles separate from said mobile unit, including a receiving antenna for picking up the modulated carrier signal when the respective civilian vehicle is within at least the general vicinity of said mobile unit, radio frequency scanning means for automatic scanning of said police communications band for providing selective response to said modulated carrier signal regardless of the frequency thereof within said police frequency band, demodulator means for providing a demodulated message signal, means for deriving a pulse message from the demodulated message signal including means for separating pulse information from non-pulse audio signals, signal detection means for causing said scanning to terminate in response to a preselected pulse message being derived from the demodulated message signal, signalling means responsive to a pulse message of a predetermined first type for providing at least a first form of signal to an operator of such civilian vehicle receiving said modulated carrier signal, transducer means within such receiving vehicle for reproducing voice messages, and first switching means responsive to a pulse message of a predetermined second type for causing a voice message of the demodulated message signals to be supplied to said transducer means.

4,241,327

DISC BRAKE PAD WEAR WARNING DEVICE

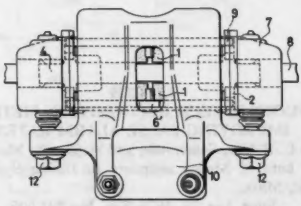
Masachika Yamamoto, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 25, 1978, Ser. No. 928,022

Claims priority, application Japan, Jul. 25, 1977, 52-89465

Int. Cl.³ B60T 17/22

U.S. Cl. 340—52 A **7 Claims**



1. In a pad wear warning device in a disc brake of the type in which a backing plate integral with a disc brake pad is supported on a guide surface so as to be slidable in the axial direction of the disc, and in which a a wear warning means is activated when excessive pad wear has occurred, the improvement comprising:

said guide surface having a step formed therein to divide said guide surface into first and second surfaces, the first surface being farther from said disc in the axial direction thereof and the second surface being disposed inwardly of said first surface in the radial direction of said disc, the width of said first surface in the disc axial direction being so selected that when the pad thickness reaches a predetermined value, the backing plate is caused to drop onto said second surface to cause said wear warning means to be activated.

4,241,328

CIRCUIT ARRANGEMENT FOR TURN-INDICATOR BLINKER LIGHTS

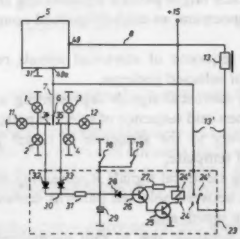
Hartwig Lobe, Unterschleissheim, and Wolfgang Dietz, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,254

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750558

Int. Cl.² B60Q 1/00, 1/34

U.S. Cl. 340—75 **11 Claims**



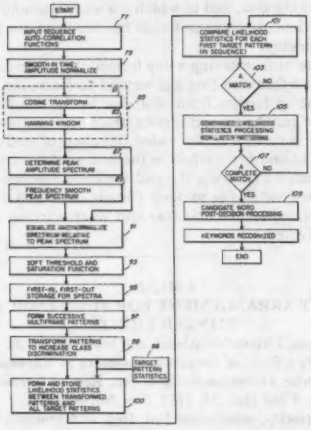
1. A circuit arrangement for the turn-indicator blinker lights of a motor vehicle, comprising an acoustic control device coordinated to the operation of the blinker lights, characterized in that the control device is rendered inoperable by an

interruption in the force-transmission of the motor vehicle, and in that a time-control switch means is operable to engage the control device with a predetermined delay after the beginning of the operation of the blinker lights with a closed force-transmission and/or after the closing of the force-transmission during the operation of the blinker lights.

4,241,329
CONTINUOUS SPEECH RECOGNITION METHOD FOR IMPROVING FALSE ALARM RATES

Lawrence G. Bahler, Somerville, and Stephen L. Moshier, Cambridge, both of Mass., assignors to Dialog Systems, Inc., Belmont, Mass.

Filed Apr. 27, 1978, Ser. No. 901,005
Int. Cl.[2] G10L *1/00*
U.S. Cl. 340—146.3 R **14 Claims**



1. In a speech analysis system for recognizing at least one predetermined keyword in an audio signal, each said keyword being characterized by a template having at least one target pattern and each target pattern representing at least one short-term power spectrum, an analysis method comprising the steps of

forming a sequence of electrical signals repesenting a sequence of selected patterns,

identifying electrical signals representing a candidate keyword when said sequence of selected patterns corresponds respectively to the sequence of target patterns of said keyword template,

normalizing electrical signals representing the time duration spacings between selected patterns corresponding to said candidate word, and

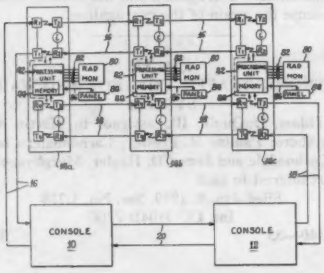
applying a prosodic test to said normalized time duration spacings,

wherein said normalized time duration spacings for a candidate word must meet the timing criteria imposed by said prosodic test before said candidate word is accepted as a recognized keyboard.

4,241,330
MULTIPLE-PROCESSOR DIGITAL COMMUNICATION SYSTEM

Thomas A. Hery, San Diego, and John G. Getchen, El Toro, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Sep. 28, 1978, Ser. No. 946,565
Int. Cl.[2] H04Q *9/00*; G06F *15/16*
U.S. Cl. 340—147 R **22 Claims**



1. A system for communicating among two central consoles and a plurality of local controllers, comprising:

first and second central consoles for controlling the communication of said system, said consoles selectively issuing command messages to said controllers and for receiving response messages therefrom;

a first two line communication path for selectively transmitting messages in both directions, said first path extending from one central console serially to all of said plurality of controllers;

a second two line communication path for selectively transmitting messages in both directions, said second path extending from the other console serially to all of said plurality of controllers, the controllers being connected nearer to said first console via said first path also being connected relatively farther from said second controller via said second path;

said central consoles being introduced so that each console is capable of communicating with each controller via each path;

each of said communication paths comprises a number of 2-conductor loops which extend between adjacently connected controllers, and between a console and the nearest controller connected thereto, each loop having a current source for the loop, said messages being transmitted in either direction by switching the current flow in the loop and another detecting the switched current flow in the loop;

each local controller having means operably connected in each loop that extends to adjacently connected controllers or to a console for switching the current flow in each of the loops and for detecting the switched current flow in each of the loops, each of said switching means and said detecting means comprising opto-isolators having a light emitting diode optically coupled to a photo-transistor.

4,241,331
REMOTE CONTROL SYSTEM WITH PROPORTIONAL VALUE TRANSMISSION

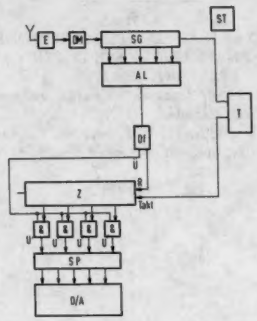
Reinhard Taeuber, Germering, and Hans Neumayr, Hilgertshausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,389

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848061

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—167 R **9 Claims**



1. A remote control system for controlling a plurality of controlled devices, comprising:

a transmitting system for transmitting digital command code words identifying the controlled devices to be activated and analog information defining the degree of activation, said transmitter system including

a code word generator operable to produce a digital code word followed by a digital signal,

selection and activation means connected to said code word generator and operable to select the code words, the time interval between the code word and the digital signal and to activate said code word generator, and

transmitting means connected to said code word generator for receiving and transmitting the digital and analog signals; and

a receiving system for providing corresponding execution signals in response to the digital and analog signals, said receiving system including

receiving means for receiving the digital and analog signals,

decoding means connected to said receiving means for decoding the code words and providing a corresponding execution command, and

analog sensing means connected to said receiving means and operable to produce a signal to terminate execution of the command.

4,241,332
PERSONAL SECURITY ALARM

Anthony Farque, Fayetteville, Ark., assignor to Body Guard, Inc., Springdale, Ark.

Filed Feb. 5, 1979, Ser. No. 9,657

Int. Cl.³ G08B 7/00, 5/00

U.S. Cl. 340—326 **12 Claims**

7. Visible and audible alarm apparatus comprising

a loud speaker,

a battery, a flash lamp,

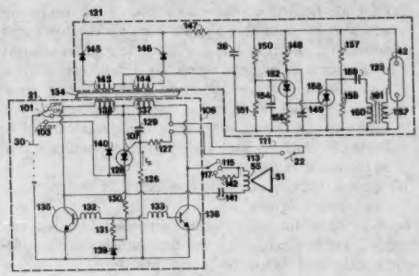
an audio frequency inverter circuit powered from said battery,

said inverter being connected to supply power to said loud speaker,

a high voltage transformer,

said inverter also being connected to the primary of said high voltage transformer,

a rectifier connected to rectify the output from the secondary of said high voltage transformer,



a capacitor connected to receive a charge from said rectifier thereby storing energy, and

a pulse trigger circuit connected to trigger said flash lamp, said flash lamp being connected to receive the energy stored in said capacitor to produce a light pulse upon each operation of said trigger circuit.

4,241,333
KEY-OPERATED ARRANGEMENT FOR PRODUCING CODE CHARACTERS

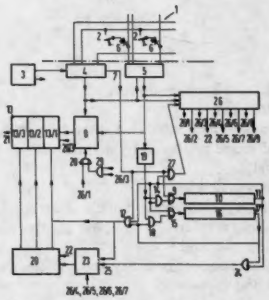
Fritz Giebler, and Edmund Gensthaler, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 695,822, Jun. 14, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,916

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1975, 2336403

Int. Cl.² G06F 3/02

U.S. Cl. 340—365 S **2 Claims**



1. A key-operated arrangement in particular for teleprinters, comprising:

(a) a keyboard to encode characters and data arranged in matrix fashion in rows and columns, each character being electrically accessed by row and column selector lines;

(b) an addressable fixed-value store comprising an integrated module;

(c) a row and column scanning device means for creating sampling signals for periodically scanning the keyboard via the selector lines and also scanning the fixed-value store and producing a coded character from said store when a signal is present produced by the operation of a keyboard contact on said keyboard, the device means also

producing a dynamic short time-period trigger signal corresponding to depression of a key in the keyboard;

(d) at least one additional special function key matrix column on said keyboard having keyboard contacts in said keyboard, the additional column also being scanned by the scanning device means;

(e) a mode register connected to receive the trigger signals and also the sampling signals from all the rows and the additional matrix column, said mode register comprising means for selecting and providing a static special function state-determined control signal corresponding to a depressed special function key and in response to the dynamic trigger signal outputting the static control signal having a relatively long time period in parallel at outputs of the mode register; and

(f) special function circuitry connected to the special function control signals,

whereby the additional column of special function keys is provided without expanding the fixed-value store to provide static control signals for the special functions.

4,241,334

ELECTRIC HORN WITH TWIN DRIVING ELECTROMAGNETS

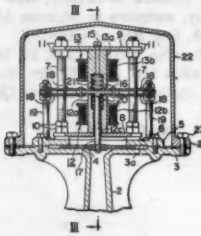
Yoshiahige Shintaku, Osaka, Japan, assignor to Ibuki Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 26, 1979, Ser. No. 33,386

Claims priority, application Japan, Jan. 29, 1979, 54/8141; Feb. 8, 1979, 54/13716

Int. Cl.[2] G08B *3/10*

U.S. Cl. 340—388 **3 Claims**



1. An electric horn, comprising:

a horn trumpet;

a diaphragm which is located at the base of the horn trumpet so that sound produced by said diaphragm enters the horn trumpet;

two electromagnets;

an oscillatory core plate which is arranged between the electromagnets and is coupled to the diaphragm by a coupling rod; and

a controller adapted to energized the electromagnets alternately and repeatedly.

4,241,335

AUTOMATICALLY SUPERVISED ALARM SYSTEM

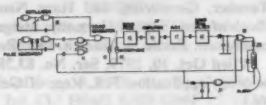
Brian S. Barnes, Birmingham, England, assignor to Modern Automatic Alarms Limited, London, England

Filed Jun. 26, 1978, Ser. No. 919,032

Int. Cl.[3] G08B *13/22*

U.S. Cl. 340—507 **9 Claims**

1. An alarm system comprising two spaced sensors for detecting a signal which is characteristic of a predetermfined emergency condition; a signal generator; and means for instituting an alarm when the sensor detects a signal which is characteristic of an emergency and when the sensor fails to detect a signal characteristic of the generator; said means for instituting an alarm being controlled by a comparator for comparing the outputs of said two sensors, so that only signals



derived from a particular region or regions are operative to actuate the alarm.

4,241,336

METHOD AND APPARATUS FOR MONITORING POLY-PHASE CURRENTS IN POLY-PHASE EQUIPMENT

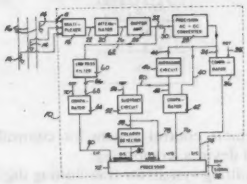
Tobias D. Schonken, Agincourt, Canada, assignor to Multilin Inc., Agincourt, Canada

Filed Nov. 13, 1978, Ser. No. 960,434

Claims priority, application United Kingdom, Nov. 14, 1977, 47366/77

Int. Cl.[3] G08B *23/00*

U.S. Cl. 340—518 **31 Claims**



1. A method of protecting poly-phase alternating current equipment against undesired conditions of current flow in the equipment, which method comprises obtaining, in respect of each phase of the equipment, a phase signal representative of the current in that phase, multiplexing the phase signals on a time division basis at a rate of at least several times the line frequency of the alternating currents in the equipment so as to obtain a single multiplexed signal, processing the multiplexed signal without de-multiplexing it to extract therefrom an output signal representative of a predetermined undesired condition of current flow in the equipment, and, in response to generation of said output signal, tripping the equipment.

4,241,337

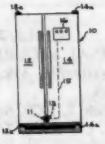
APPLIANCE DOOR POSITION SENSOR ARRANGEMENT

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 29, 1979, Ser. No. 25,214

Int. Cl.[3] G08B *13/08*

U.S. Cl. 340—547 **7 Claims**



1. A door position sensor arrangement for an appliance having at least one access opening defined by a frame and a door therefor which is hinged at one side thereof, the arrangement comprising:

means for producing a magnetic field;

switch means operatively responsive to said magnetic field;

a first one of said means being mounted on the edge of said

door, the second of said means being mounted at a position spaced forward of said frame and directly opposite said first means, said first and second means being aligned generally in a plane that passes through the door edge and is parallel to the plane of said access opening, such that said switch means is influenced by said magnetic field to be in a first switch condition when the door is properly closed and in a second switch condition when the door is spaced away from said properly closed position by at least a predetermined amount;

and means responsive to said second condition of the switch means for providing an indication that the door is not properly closed.

4,241,338

AMBIENT NOISE INTRUDER ALARM

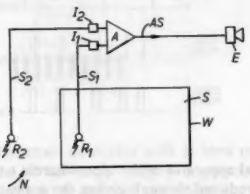
Ernst Spirig, P.O. Box 160, Speerstrasse 14, CH-8640 Rapperswil, Switzerland

Filed May 7, 1979, Ser. No. 36,454

Claims priority, application United Kingdom, May 15, 1978, 19603/78

Int. Cl.³ G08B 13/16

U.S. Cl. 340—566 **7 Claims**



1. An intruder alarm apparatus for producing an alarm when an intruder enters a closed space being supervised, comprising first and second receivers (R1, R2) each having an output terminal, said receivers being responsive to ambient noise transmitted through the air;

nornally de-activated alarm means (E); and

comparator means (A) having a pair of input terminals connected with the output terminals of said receivers, respectively, and an output terminal connected with said alarm means, said comparator means being operated to activated said alarm means when the difference between the output signals of said receivers deviates from a given threshold value.

4,241,339

MULTI-COLORED DISPLAY DEVICE

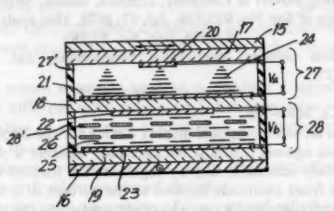
Yoshito Ushiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,548

Claims priority, application Japan, Feb. 16, 1977, 52/15906

Int. Cl.³ G09F 9/35

U.S. Cl. 340—702 **9 Claims**



1. A multi-colored display device comprising an array of N liquid crystal display cells arranged sequentially along a line of sight from an observer, said display cells having transparent electrodes deposited on the interior surfaces of opposed transparent plates, the first of said display cells towards the observer including a twisted nematic liquid crystal having an optical activity of 90° and a first polarizing plate disposed on the surface of said first display cell, each of the N-1 remaining display cells including a guest-host liquid crystal and a dye, each said guest-host liquid crystal oriented in parallel with the axis of polarization of said first polarizing plate and a colored polarizing plate having an axis of polarization perpendicular to the axis of polarization of said first polarizing plate disposed on the exposed surface of the last display cell of said array.

4,241,340

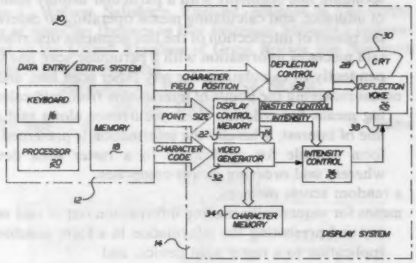
APPARATUS FOR GENERATING DISPLAYS OF VARIABLE SIZE CHARACTERS

Meredith T. Raney, Jr., Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed May 26, 1978, Ser. No. 909,797

Int. Cl.³ G06F 3/14

U.S. Cl. 340—731 **8 Claims**



1. Apparatus for controlling an energy beam to paint a plurality of variable size characters on an energy responsive surface one at a time, comprising:

raster scanning means for causing the energy beam to separately raster scan each of the portions of the energy responsive display surface upon which the individual characters are to be displayed by scanning a plurality of adjacent display strokes in each portion, with the raster scan of each portion being completed before scanning of the next portion has begun;

raster control means responsive to raster control signals to vary the length of and separation between said display strokes;

means responsive to a video signal for controlling the intensity of said energy beam as said beam raster scans each of said portions of said display surface so as to thereby display said characters on the respective said portions of said surface;

means for providing information representing the individual strokes to be displayed to generate selected characters;

video signal generating means for generating a video signal from said individual stroke information in synchronism with the raster scanning, and including means for repeating the information of each of said individual strokes a selected number of times N in said video signal so that said information for each of said individual strokes is displayed in a selected number N of adjacent display strokes on said portion of said display surface;

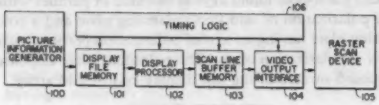
means for providing an indication of the size of said image to be displayed; and

means responsive to said indication for providing said raster control signals and said selected number N in accordance therewith.

4,241,341
APPARATUS FOR SCAN CONVERSION

Mark R. Thorson, 12991 Pierce Rd., Saratoga, Calif. 95070

Filed Mar. 5, 1979, Ser. No. 17,396
Int. Cl.³ G06F 3/153
U.S. Cl. 340—744 8 Claims



1. A system for converting pieces of information, each corresponding to one of a plurality of line segments that together form a picture, into a form suitable for display on a raster scan device, comprising:

a memory capable of storing a plurality of said pieces of information,

means receiving said pieces of information from said memory for calculating any points of intersection of the corresponding line segments with a particular display scan line of intersect, said calculating means operating to determine the points of intersection of the line segments described by said pieces of information with a particular scan line independently of calculations for any other scan line, and

means receiving the points of intersection from said calculating means for ordering their occurrence along said scan line of interest, whereby the information is presented in a form suitable for application to a raster scan device, wherein said ordering means comprises:

a random access memory,

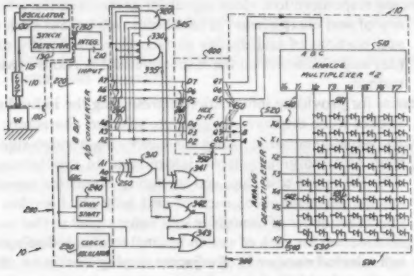
means for sequentially reading information out of said memory and presenting the information in a form suitable for application to a raster scan device, and

means receiving the points of intersection as determined by said calculating means for addressing locations of said random access memory that correspond to the points of intersection.

4,241,342
MEASUREMENT INDICATING APPARATUS AND METHOD

Kenneth A. Merriweather, Madison Township, Dayton County, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1979, Ser. No. 16,706
Int. Cl.³ G06F 3/147
U.S. Cl. 340—753 9 Claims



1. A method of periodically generating a display of a measurement comprising the steps of:

periodically generating an analog signal indicative of the measurement;

converting the analog signal into a digital representation, said representation including a portion of greater significance and a portion of lesser significance;

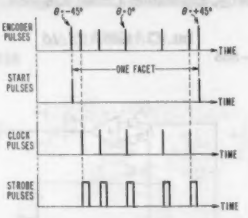
displaying on a display the greater significance portion of the digital representation; and

inhibiting a change in the display in response to predetermined values of the lesser significance portion of the digital representation.

4,241,343
DISPLAY APPARATUS

George J. Fan, Ossining; Richard L. Garwin, Scarsdale; James L. Levine, Yorktown Heights, and Janusz S. Wilczynski, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 755,886, Dec. 30, 1976, abandoned.
This application Aug. 18, 1978, Ser. No. 934,779
Int. Cl.³ G06F 3/14
U.S. Cl. 340—755 3 Claims



1. In visual apparatus of the type wherein a two-dimensional display is produced through giving the appearance of cyclical motion to the virtual image of the light from each member of a row of lights by passing the light through a rotating prism and selectively turning each light "on" and "off" during portions of said motion in accordance with a pattern to be displayed;

the distortion compensating improvement comprising:

means for precorrecting light signal "on" and "off" timing apparatus synchronized with rotation of said prism said precorrecting apparatus including sensible means angularly spaced with respect to said virtual image travel during passage of a facet of said prism to accommodate for the apparent change inmovement rate of said virtual image to the eye of the observer as said image traverses portions of said cyclical motion.

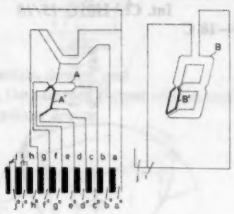
4,241,344
ELECTRO-OPTICAL DEVICE FOR THE DISPLAY OF DARK SYMBOLS COMPOSED OF SEPARATELY SELECTABLE DISPLAY SEGMENTS AGAINST A BRIGHT BACKGROUND AND A MEANS FOR ADDRESSING THIS DEVICE

Allan R. Kmetz, Nussbaumen; Klaus Müller, Baden, and Terry J. Scheffer, Forch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Division of Ser. No. 925,539, Jul. 17, 1978. This application Apr. 5, 1979, Ser. No. 27,382
Claims priority, application Switzerland, Jul. 29, 1977, 9397/77
Int. Cl.³ G09F 9/35
U.S. Cl. 340—765 7 Claims

1. In an electro-optical display device for the display of dark symbols against a bright background, wherein a plurality of separately selectable display segments are formed by a transparent front electrode applied to the surface of a transparent front cell plate and a rear electrode applied to the surface of a rear cell plate between which is located an electro-optical medium formed by a guest-host liquid crystal mixture, in particular a cholesteric liquid crystal with at least one added

pleochroic dye, said cholesteric liquid crystal exhibiting a transition voltage where the cholesteric liquid crystal phase transforms to a nematic phase, said front electrode composed of a plurality of electrode elements that are electrically insulated from each other, said rear electrode composed of at least two electrode elements that cover nearly the entire area of the rear cell plate except for fine separation lines which serve to insulate them from each other, said front and said rear electrode elements having conduction paths leading to them, said front electrode having narrow separation lines which serve to electrically insulate the electrode elements thereof from each other and whose dimensions are small compared to the dimensions of the displayed symbols, said front electrode, except for said narrow separation lines, covering nearly the entire area of the front cell plate, and wherein at least one section of the separation line on the front electrode coincides with at least one third of the circumference of at least one display segment of a display symbol and at least one section of the separation



line on the rear electrode coincides with at least one third of the circumference of the same display segment, improved means for driving the front and rear electrodes corresponding to an optically selected display element, comprising:

means for addressing the display device whereby selected electrode segments are displayed against said bright background, said addressing means comprising,

first means for applying first unipolar addressing signals to the selected front and rear electrodes corresponding to the selected display segments of a desired symbol, said first addressing signal having the same amplitude, frequency, phase and waveform, and

second means for applying second addressing signals to the front and rear electrodes corresponding to unselected display segments, said second signals producing a potential difference in every region of the display background larger than the transition voltage of the electro-optical medium.

4,241,345

PULSE RADAR TRANSMITTING OSCILLATOR

Henry C. Johnson, Neshanic, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1979, Ser. No. 44,177

Int. Cl.³ G01S *7/02*

U.S. Cl. 343—5 SW **10 Claims**

1. A pulsed radar oscillator comprising in combination:

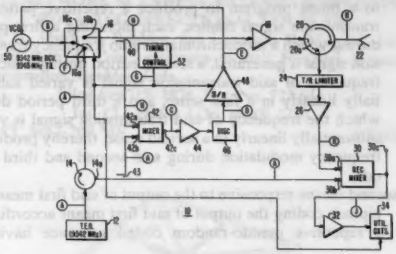
a first means producing a signal of a given radio frequency f_1;

a second means normally adapted to produce a signal of a second different radio frequency f_2 but responsive to the application of said signal of frequency f_1 thereto for producing frequency f_1;

means responsive to said second means for transmitting said frequency f_2 when produced thereby;

means producing a succession of time spaced pulses of one value alternating with a succession of time spaced pulses of another value; and

means responsive to said pulses of one value for applying said frequency f_1 to said second means and responsive to



said pulses of another value for removing said frequency f_1 from said second means.

4,241,346

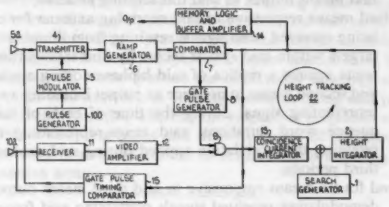
PULSE RADAR ALTIMETERS

George C. Watson, Salisbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 11, 1979, Ser. No. 56,678

Int. Cl.³ G01S *13/12*

U.S. Cl. 343—7 A **6 Claims**



4. An aircraft radar altimeter comprising,

a transmitter for transmitting radar pulses,

a variable beam width transmitter antenna for radiating the output of the transmitter towards the ground,

a variable beam width receiver antenna for receiving radar ground echoes,

a receiver connected to receive signals from said receiver antenna,

a timer connected to receive inputs from said transmitter and receiver for measuring time intervals between the transmission of each said pulse and the reception of a corresponding ground echo signal, the intervals being proportional to search altitude of said aircraft,

and control means responsive to output of said timer and arranged to simultaneously vary the beam widths of the antennas in accordance with the values of the measured time intervals.

4,241,347

PRC/FM CW RADAR SYSTEM

Damian F. Albanese, and Albert M. Klein, both of Chatsworth, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 28, 1978, Ser. No. 919,910

Int. Cl.² G01S *9/233, 9/24*

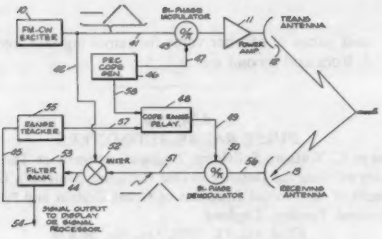
U.S. Cl. 343—9 R **14 Claims**

4. A CW radar system comprising:

transmitting and receiving antennas having patterns covering substantially the same spatial sector;

first means for generating a radio frequency signal according to a timed program to produce a repetitive pattern of transmission signal frames, each including a first period during which a monochromatic radio frequency transmission signal is generated, a second period during which the frequency of said transmission signal is varied substantially linearly in a first sense, and a third period during which the frequency of said transmission signal is varied substantially linearly in a second sense, thereby producing frequency modulation during said second and third periods;

second means responsive to the output of said first means for biphase coding the output of said first means according to a repetitive pseudo-random coded sequence having a



predetermined word duration and for applying said coded first means output to said transmitting antenna;

third means responsive to said receiving antenna for correlating received echo signals resulting from illumination of targets within said spatial sector by said transmitting antenna against a replica of said biphase coding applied in said second means to produce an output including a range-representing signal during the time of each of said sequence word durations, said range-representing signal retaining the modulation applied during said second and third periods;

and fourth means responsive to said third means output for demodulating received signals containing said frequency modulation to select a range-representing pulse from the output of said third means, said selected pulse unambiguously representing the range of a corresponding target.

4,241,348

RADAR EQUIPMENT FOR VEHICLES

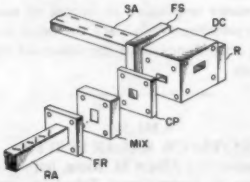
Hiroyuki Yatsuka, Kawasaki, and Yasuhiro Isogai, Akashi, both of Japan, assignors to Fujitsu Limited and Fujitsu Ten Limited, both of, Japan

Filed Aug. 20, 1979, Ser. No. 68,005

Claims priority, application Japan, Aug. 21, 1978, 53-101563

Int. Cl.[3] G01S *13/26, 13/34;* H01Q *13/10*

U.S. Cl. 343—17.5 **3 Claims**



1. Radar equipment for vehicles which sends out from a transmitting antenna a continuous wave signal modulated by a frequency modulator, receives a reflected wave by a receiving antenna and mixes it with one portion of the output from the frequency modulator and in which the sending and the receiving antenna are arranged in a V-letter form, characterized by a directional coupler provided between the frequency modulator and the sending antenna for applying one portion of the output from the frequency modulator to a mixer of an in-line type supplied with the received signal from the receiving antenna, a coupling element provided so that a waveguide of the in-line type mixer and a waveguide of the directional coupler perpendicularly intersect each other in their lengthwise direction to achieve predetermined coupling between the waveguides, and an impedance-adjustable dummy load connected to a dummy terminal of the directional coupler.

4,241,349

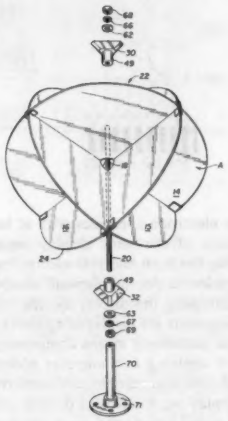
APPARATUS FOR DISPOSING CORNER CUBE REFLECTOR FOR DETECTION

John L. Connell, San Francisco, Calif., assignor to Davis Instruments Corporation, San Leandro, Calif.

Filed Mar. 9, 1979, Ser. No. 19,191

Int. Cl.[3] H01Q *15/18*

U.S. Cl. 343—18 C **13 Claims**



1. Apparatus for holding an octahedral radar reflector cluster having eight corner cubes comprising in combination first and second tapered members, each said tapered member confronted across opposing corner cubes to each of the three mutually orthogonal surfaces of a corner cube, said respective tapered members being disposed with their respective constricted ends towards one another; means for urging said respective tapered members towards one another across the apexes of said opposed corner cubes whereby said tapered members are wedged into opposing apexes of said opposed corner cubes; and a vertical support fastened to one of said members.

4,241,350

RADAR TARGET PATTERN RECOGNITION SYSTEM USING LOGARITHMIC ANALYSIS

Malcolm R. Uffelman, Vienna, Va., assignor to Scope, Inc., Reston, Va.

Continuation of Ser. No. 479,083, Aug. 12, 1965, abandoned. This application Dec. 10, 1971, Ser. No. 206,957

Int. Cl.[3] G01S *7/44*

U.S. Cl. 343—5 SA **11 Claims**

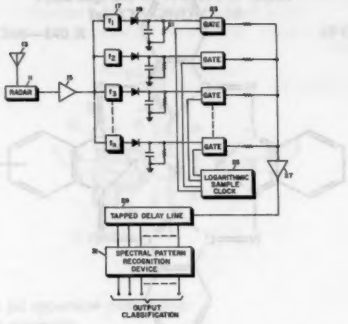
1. A target pattern recognition system comprising,

radar means for detecting a target,

a parallel bank spectrum analyzer,

coupling means for delivering the radar output to the input of said analyzer,

means coupling the output of said analyzer to said last named means for sampling the output of said analyzer relative to a logarithmic frequency base,



a pattern recognition device, and

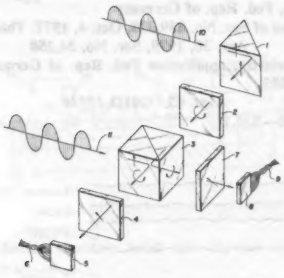
means coupling the sampled output of said analyzer to said pattern recognition device.

4,241,351

ARRAY ANTENNA CONTROLLER

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1979, Ser. No. 29,421
Int. Cl.³ H04B 7/00
U.S. Cl. 343—100 SA **7 Claims**



1. An apparatus for causing an array antenna to transmit a selected antenna pattern, said array antenna having a plurality of array elements comprising,

a first transparency which varies in transmittance in accordance with a parameter of said selected antenna pattern,

optical processor means including both means for directing a coherent light beam through said transparency so that said beam is spatially modulated by said variation in transmittance and means for taking the Fourier transform of said modulated beam, thus forming a resultant beam,

means for providing electrical signals corresponding to the amplitude and/or phase of a plurality of spatially displaced samples of said resultant beam, said samples corresponding in relative spacing to the elements of said array antenna, and

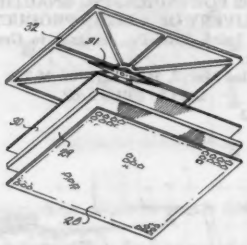
means for exciting the elements of said array antenna with said electrical signals.

4,241,352

FEED NETWORK SCANNING ANTENNA EMPLOYING ROTATING DIRECTIONAL COUPLER

Mark H. Alspaugh, Boulder, and Lawrence R. Murphy, Longmont, both of Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sep. 15, 1976, Ser. No. 723,643
Int. Cl.² H01Q 3/26; H01P 5/18
U.S. Cl. 343—700 MS **8 Claims**



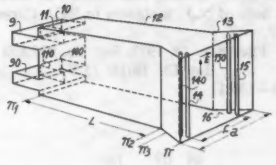
1. A microwave beam scanning antenna system having an antenna array comprising a plurality of antenna elements, a single point signal feed network, and a scan network coupling the single point signal feed network to said antenna array, said scan network comprising a plurality of coupling paths extending between said single point feed network and said antenna elements and including a planar portion and further including a cyclically mechanically displaced coupler spaced from but coplanar to said planar portion for electrically coupling said single point feed network to varying locations along said plurality of coupling paths, whereby the respective lengths of said plurality of coupling paths and hence phasing of the signals thereon vary in a cyclic fashion to achieve beam scanning of said antenna array.

4,241,353

MULTIMODE MONOPULSE FEED AND ANTENNA INCORPORATING SAME

Francois Salvat; Jean Bouko, and Claude Coquio, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 21, 1979, Ser. No. 13,272
Claims priority, application France, Feb. 24, 1978, 78 05337
Int. Cl.³ H01Q 13/02
U.S. Cl. 343—786 **9 Claims**



1. A multimode monopulse feed comprising an E-plane multimode structure producing the E function, an H-plane multimode structure producing the H function, the aperture of the H-plane structure forming the aperture of the multimode microwave feed, a group of waveguides connected to the input of said E-plane structure, which waveguides are excited in the fundamental mode, said E-plane multimode structure terminating in a flared horn presenting an aperture, at least two obsta-

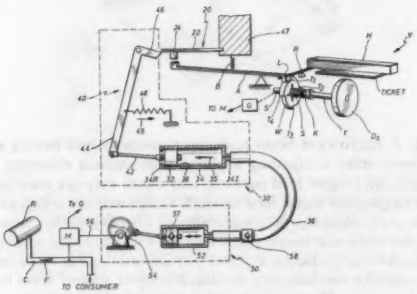
cles being placed in said aperture in such a way that said obstacles have a longitudinal dimension parallel to the electric field in said aperture, said obstacles generating an odd propagative upper mode of the H_{30} type, the said multimode structure forming a mixed E-plane and H-plane structure of reduced length in whose aperture the E-plane and H-plane illumination characteristics are controllable independently but simultaneously.

4,241,354

APPARATUS FOR INDICATING UNAUTHORIZED DELIVERY OF A FLUID PRODUCT

Christopher B. Laird, Erie, Pa., assignor to Geosource Inc., Houston, Tex.

Filed Mar. 2, 1979, Ser. No. 16,796
Int. Cl.³ G01D 5/02
U.S. Cl. 346—43 **12 Claims**



1. Apparatus for monitoring the flow of a fluid from a reservoir by generating a predetermined indicia on a ticket, the apparatus comprising:

means for generating on the ticket an indicia representative of the occurrence of both an interruption of a predetermined duration in the flow of fluid from the reservoir followed by a resumption of fluid flow before the ticket is removed; and

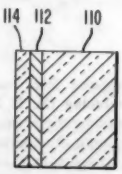
a timer arrangement operatively associated with the indicia generating means and responsive to the flow of fluid for timing the duration of an interruption thereof and for priming the indicia generating means if the duration of the interruption exceeds the predetermined time interval.

4,241,355

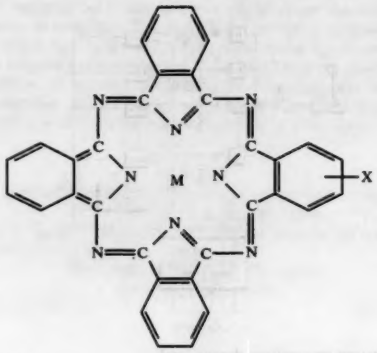
ABLATIVE OPTICAL RECORDING MEDIUM

Allen Bloom, East Windsor, and William J. Burke, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,853
Int. Cl.³ G01D 15/34
U.S. Cl. 346—135.1 **9 Claims**



1. An ablative optical recording medium comprising a light reflecting material coated with a layer of a light absorbing dye having the formula



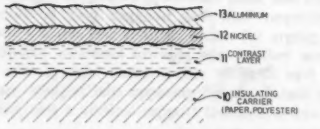
wherein X is hydrogen or chlorine and M is selected from the group consisting of lead, aluminum, vanadyl or tin (+4).

4,241,356

RECORDING MEDIUM FOR THERMOGRAPHIC RECORDING OF DATA ITEMS

Klaus Brill, Korntal, and Wolfgang Grothe, Tiefenbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 839,378, Oct. 4, 1977. This application Apr. 30, 1979, Ser. No. 34,258
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645485
Int. Cl.³ G01D 15/34
U.S. Cl. 346—135.1 **14 Claims**



1. Recording medium for electrosensitive recording of data items having a substrate **(10)** and a metallic layer **(12, 13)** thereover, in which the metallic layer on the substrate **(10)** is adapted to be removed by an electrical discharge by burning off the metallic layer beneath the electrode in contact with the medium to leave a visible mark representative of a data item to be recorded,

wherein, in accordance with the invention,

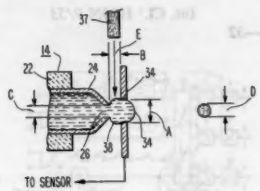
the metallic layer comprises a two-metal, two-layer system comprising a top layer of aluminum **(13)** and a layer of metallic nickel **(12)** applied therebeneath, the aluminum and nickel being present in respective quantities relative to each other to chemically react with each other in an exothermal reaction upon application of an electrical discharge of sufficient energy to initiate a chemical reaction of the nickel with the aluminum.

4,241,357

METHOD AND APPARATUS FOR OPERATING AN INK JET

Themos C. Anestos, Utica, Mich., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 24, 1979, Ser. No. 78,131
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 12 Claims



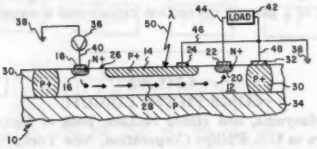
1. Ink jet apparatus comprising:
an ink reservoir;
an ink jet including an orifice issuing ink droplets therefrom;
means for supplying ink from said reservoir to said ink jet; and
impedance sensing means associated with said orifice for sensing changes in impedance resulting from the presence or absence of ink droplets accumulating at said orifice.

4,241,358

RADIATION SENSITIVE DEVICE WITH LATERAL CURRENT

Edward C. Wade, Carrollton, Tex., assignor to TRW Inc., Los Angeles, Calif.

Filed Mar. 26, 1979, Ser. No. 23,685
Int. Cl.³ H01B 27/14
U.S. Cl. 357—30 12 Claims



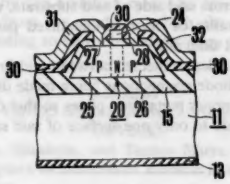
1. A radiation sensitive solid state device comprising in combination:
a semiconductor layer of one conductivity type;
a radiation sensitive element present in the semiconductor layer comprising an electrode situated at or adjacent a first surface and forming a rectifying junction with the semiconductor layer material of the one conductivity type;
a first connection of the semiconductor layer;
a second connection of the semiconductor layer spaced apart laterally from the first connection on the opposite side of the radiation sensitive element wherein the semiconductor layer portion situated intermediate said connections forms a low resistance path having a thickness measured from the radiation sensitive element to the edge opposite the radiation sensitive element between roughly about six microns and roughly about seven microns whereby a substantially lateral flow of charge carriers characteristic of the one conductivity type can occur; and
a connection of the radiation sensitive element.

4,241,359

SEMICONDUCTOR DEVICE HAVING BURIED INSULATING LAYER

Katsutoshi Izumi, Seki; Masanobu Doken, and Hisashi Ariyoshi, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,738
Claims priority, application Japan, Nov. 28, 1977, 52-141599
Int. Cl.³ H01L 27/12, 29/78, 29/06
U.S. Cl. 357—49 8 Claims



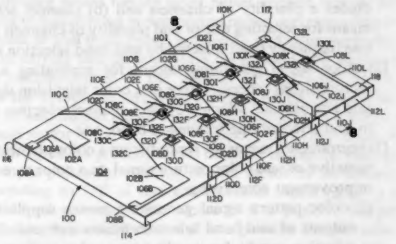
1. A semiconductor device for use in fabricating an integrated circuit, comprising:
a semiconductor substrate having a pair of opposed surfaces;
a buried insulating compound layer disposed within said substrate and at a predetermined depth from one surface thereof, said buried insulating compound layer being formed by implanting ions through said one surface;
semiconductor circuit elements formed in an upper layer of said substrate lying between said buried insulating compound layer and said one surface, said circuit elements being incorporated into an island formed by selectively etching said upper layer; and
an insulating film formed on the other surface of said substrate and having a thickness sufficient to compensate for the strain induced in said substrate during the formation of said buried insulating compound layer.

4,241,360

SERIES CAPACITOR VOLTAGE MULTIPLIER CIRCUIT WITH TOP CONNECTED RECTIFIERS

John G. Hambor, Colt's Neck, and James G. Bickel, Wayside, both of N.J., assignors to Galileo Electro-Optics Corp., Sturbridge, Mass.

Continuation-in-part of Ser. No. 728,615, Oct. 1, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,610
Int. Cl.³ H01L 29/06
U.S. Cl. 357—56 12 Claims



1. A voltage multiplier device of the type having capacitors connected in a first and a second series, and having diodes bridging between said series, said device comprising
at least one dielectric substrate with upper, lower, and side surfaces,
a plurality of discrete metallized upper plates on said upper surface,

a plurality of discrete metallized lower plates on said lower surface,

said upper plates being aligned with said lower plates to form pairs of upper and lower aligned plates, each pair of aligned plates acting with the intervening substrate to form a capacitor,

a plurality of metallized paths

each said path connecting the upper plate of one said pair to the lower plate of an adjacent said pair so as to connect said capacitors in one of said first and second series,

each said path extending from said upper to said lower surface across said side of said substrate, thereby forming a plurality of discrete metallized paths extending across said side, and

a plurality of diodes connected between said first and second series, said diode connections being made directly to and only to said upper metallized plates so that diode connections are made to only one surface of said substrate.

4,241,361

TUNING VOLTAGE DISPLAY DEVICE FOR A COLOR TELEVISION RECEIVER WITH AN ELECTRONIC TUNER

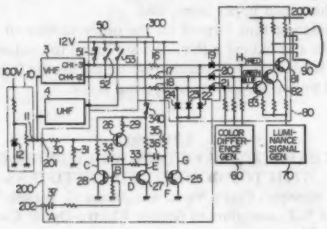
Masanori Kamiya, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 16, 1979, Ser. No. 21,200

Claims priority, application Japan, Mar. 20, 1978, 53/32124

Int. Cl.³ H04N *5/50, 9/62*

U.S. Cl. 358—10 **7 Claims**



4. In a color television receiver having:

(1) a tuner having (a) band selection means for selecting any one of a plurality of frequency bands each of which includes a plurality of channels and (b) channel selection means for selecting one of said plurality of channels in said one frequency band selected by said band selection means;

(2) color signal generating means for generating a color picture signal representative of a color television signal in said one channel selected by said channel selection means in said selected one frequency band; and

(3) reproducing means for reproducing a color picture representative of said color picture signal on a color screen, the improvement comprising:

(i) color pattern signal generating means supplied with outputs of said band selection means and said channel selection means for producing a color pattern signal which is supplied to said color signal generating means and mixed with said color picture signal, so that the thus mixed signal output of said color signal generating means causes said reproducing means to reproduce on said color screen a reproduced color picture as well as a color pattern whose color and pattern are representative of said selected one frequency band and said selected one channel, respectively.

4,241,362

CIRCUIT FOR INCREASING A SIGNAL SLOPE OF A PERIODICALLY OCCURRING SIGNAL MAINLY NEAR A REFERENCE LEVEL

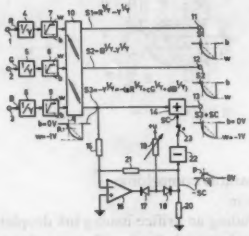
Nicolaas J. L. Van der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1978, Ser. No. 960,527

Claims priority, application Netherlands, Dec. 27, 1977, 7714398

Int. Cl.³ H04N *9/53*

U.S. Cl. 358—32 **5 Claims**



1. A circuit for increasing, mainly near a reference level, a signal slope of a periodically occurring signal, wherein the circuit comprises a differential amplifier provided with a first and a second input to which the supply of the signal to be processed and a reference potential, respectively, and supplied, and an output; a first signal limiting circuit connected to said amplifier output; a first and a second resistor arranged serially and connected at the junction thereof to said first signal limiting circuit, said first and second resistors being connected respectively to the first amplifier input and the reference potential; and a superposition stage having a first input connected to said junction and a second input for receiving the signal to be processed, and an output for supplying the signal with the increased signal slope.

5. A circuit as claimed in claim 1 suitable for use in a color television camera, wherein the circuit is present in a luminance channel subsequent to a matrix circuit, inputs of the matrix circuit being connected to outputs of series arrangements, each consisting of a gamma correction circuit and a signal limiting circuit.

4,241,363

COMB FILTER CIRCUIT

Teruaki Maeyama, and Hideo Nakata, both of Suita, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 27,957

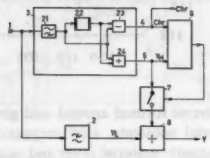
Claims priority, application Netherlands, Apr. 13, 1978, 7803910

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—36 **4 Claims**

1. A comb filter circuit comprising an input for receiving a composite color television signal, a comb filter coupled to said input and having a first and a second output for providing respectively a combed high-frequency luminance signal component from a composite color television signal and a combed chrominance signal component, a low-pass filter also coupled to said input for providing a low-frequency luminance signal component, an adding circuit having a first input coupled to the first output of the comb filter and a second input coupled to the low-pass filter, a detector coupled to the first and second outputs of said comb filter for detecting an unsuppressed chrominance signal component in the high-frequency luminance signal component, and an attenuation circuit having a control input coupled to said detector for attenuating at least a portion of the high-frequency luminance signal component at the first input of said adding circuit when an unsuppressed chrominance signal occurs in said high-frequency luminance signal

component, wherein the detector comprises a multiplier having a first input coupled to the first output of the comb filter, a



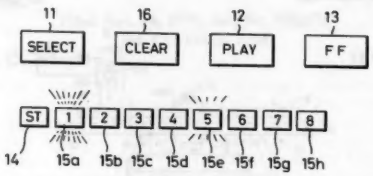
second input coupled to the second output of the comb filter, and an output coupled to the control input of the attenuation circuit.

4,241,364

PROGRAM-SELECTING DEVICE IN A REPRODUCING APPARATUS

Takashi Shiga, Tokyo, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed May 29, 1979, Ser. No. 42,908
Claims priority, application Japan, May 29, 1978, 53/63363
Int. Cl.[3] G11B *15/18*
U.S. Cl. 360—72.1 **6 Claims**



1. A program-selecting device in a reproducing apparatus having a fast-forward search speed and a normal playback speed for reproducing a selected program from a recording medium having a plurality of spaced programs recorded thereon, said program-selecting device comprising: a switch program selection which is manipulatively operated a number of times corresponding to

the number of programs to be skipped over to reach the selected program;

a memory circuit means for storing the number of times the switch is thus operated;

a counting circuit means for detecting the parts between adjacent programs from the signal reproduced at the fast-forward search speed from the recording medium thereby to count the number of programs skipped over at the fast-forward speed;

a comparison circuit producing a coincidence signal when the output of the memory circuit and the output of the counting circuit coincide;

means operating in response to said coincidence signal to change the apparatus from the fast-forward search speed over to the normal playback speed to thereby play the selected program;

display means comprising a set of display elements provided in a plural number corresponding respectively to the number of program numbers which can be selected, said display means activating the display element corresponding to the program number of the selected program to lite such; and

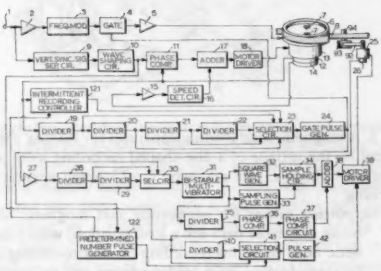
lighting means activating the display elements corresponding to the counted skipped over programs as they are detected by the counting means to lite such in a mode different from the mode in which the display element corresponding to said selected program number is lit.

4,241,365

MAGNETIC VIDEO RECORDING AND REPRODUCING DEVICE

Minoru Koda, Hirakata, and Tsuneo Muya, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 734,809, Oct. 22, 1976, abandoned.
This application Aug. 22, 1978, Ser. No. 936,189
Claims priority, application Japan, Oct. 31, 1975, 50-131587
Int. Cl.[2] G11B *15/28*
U.S. Cl. 360—73 **5 Claims**



1. A magnetic recording and reproducing device in which a video signal is recorded intermittently on an oblique magnetic track formed on a magnetic tape by a rotary magnetic head, and reproduced therefrom, said device comprising: a tape driving capstan rotatable for moving the magnetic tape a predetermined constant distance for each rotation thereof; a pulse motor for rotating said capstan; driving means coupled to said motor for rotating said motor; pulse supplying means coupled to said driving means having input pulses applied thereto for supplying to said driving means output pulses corresponding to the number of said input pulses applied to said pulse supplying means for driving said driving means for rotating said motor an amount corresponding to the number of said input pulses, wherein the number of said input pulses corresponding to the number of said output pulses for driving said driving means to rotate said motor by an amount corresponding to one track of said video signal is a predetermined constant α, and the number of said input pulses for rotation of said motor by an amount corresponding to $1/\beta$ of one track of said video signal is a predetermined constant α/β, where α is a positive integer other than a prime number and β is a positive integer other than 1; a first pulse generating means for generating input pulses to be applied to said pulse supplying means; a first gating means connected between said first pulse generating means and said pulse supplying means for gating said input pulses to said pulse supplying means; pulse counting means coupled to said first pulse generating means and said first gating means and including a first pulse counter for counting said input pulses for producing one pulse every time said first pulse counter counts α/β pulses, and a second pulse counter coupled to said first pulse counter for receiving pulses produced from said first pulse counter and for counting the received pulses to produce

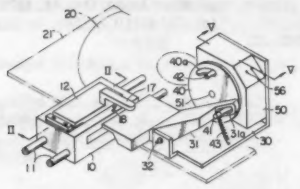
one pulse after said second pulse counter counts β pulses, and selecting means coupled to said pulse counting means and to said first gating means for manually selecting the operation of said pulse counting means for opening said first gating means only during a time α/β number of said input pulses are counted by said first pulse counter so as to apply only α/β number of said input pulses to said pulse supplying means, or opening said first gating means only during a time β number of the pulses from said first pulse counter are counted by said pulse counter so as to apply only α number of said input pulses to said pulse supplying means.

4,241,366

MAGNETIC HEAD LOADING APPARATUS

Hiroshi Nishida, Kanagawa; Kazuo Nakagoshi, Odawara; Jun Naruse, Odawara, and Kunihiro Motoyoshi, Odawara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 5, 1979, Ser. No. 9,688
Claims priority, application Japan, Feb. 16, 1978, 53/15957
Int. Cl.[3] G11B *5/54*
U.S. Cl. 360—105 7 Claims



1. A magnetic head loading apparatus for loading a magnetic head on the surface of a disc-shaped recording medium rotating continuously, said magnetic head loading apparatus comprising

supporting means for supporting said magnetic head and being moveable between a load position, where said magnetic head performs recording on said recording medium or reproduction from said medium, and an unload position, where said head is retracted from said recording medium; and

a means for shifting said supporting means from said unload position to said load position in such a manner that the speed of said magnetic head is lowered as said magnetic head moves closer to said surface of said recording medium.

4,241,367

THIN FILM MAGNETIC HEAD

Noboru Nomura, Kyoto; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Norimoto Nouchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 5, 1979, Ser. No. 17,536
Claims priority, application Japan, Mar. 3, 1978, 53/24887; Dec. 28, 1978, 53/165644
Int. Cl.[3] G11B *5/14, 5/20*
U.S. Cl. 360—127 5 Claims

1. A thin film magnetic head comprising:

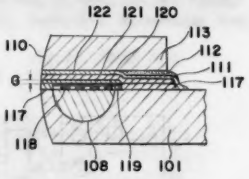
a magnetic material substrate having a contact portion adapted to face a magnetic medium and a surface extending substantially perpendicularly of said contact portion; said substrate having formed in said surface thereof a groove;

a non-magnetic insulating material filling said groove;

at least one conductive body layer formed on said non-magnetic insulating material and extending substantially parallel to said groove;

a magnetic gap made of a non-magnetic insulating body layer formed over said magnetic material substrate and extending from said contact portion at least to said groove;

an upper portion magnetic material layer covering said magnetic gap and said magnetic material substrate; and



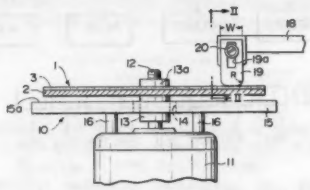
a magnetic circuit formed around said groove by said magnetic material substrate, said magnetic gap, said upper portion magnetic material layer and said conductive body layer.

4,241,368

MAGNETIC SHEET RECORDER WITH A MAGNETIC SHEET SURFACE TREATING MEANS

Eiichi Tadokoro, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 835,791, Sep. 22, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,209
Claims priority, application Japan, Nov. 9, 1976, 51-134535
Int. Cl.[3] G11B *3/58, 25/04*
U.S. Cl. 360—128 13 Claims



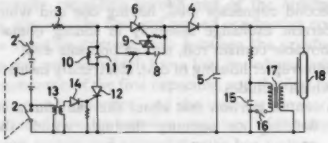
1. A magnetic sheet recorder provided with means for rotating a magnetic sheet having a magnetic layer, a back plate supporting the magnetic sheet, head support means, and a magnetic head supported on said head support means and which is put into contact with the magnetic layer of the magnetic sheet and moved substantially in the radial direction for recording or reproduction, wherein the improvement comprises a surface treating means provided in said recorder to be put into contact with the magnetic layer of the magnetic sheet simultaneously with said magnetic head for removing from the surface of the magnetic layer dust particles, scratches and the like thereon and said surface treating means being movable substantially in the radial direction of the magnetic sheet as the magnetic sheet is rotated, said surface treating means being mounted on said head support means on the leading side of said magnetic head and positioned to contact the area of the recording track of said magnetic sheet simultaneously with and in advance of such contact by said magnetic head.

4,241,369

ELECTRICAL POWER SOURCE FOR AN ELECTRONIC FLASH UNIT

Kazuo Ikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,899
Claims priority, application Japan, Jun. 26, 1978, 53-77153
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—8 **7 Claims**



1. An electrical power supply apparatus for an electronic flash unit having electrical energy storage means and a charging circuit for the storage means, comprising:

an electrical power source switch having mechanical contacts and connected in the charging circuit for said storage means;

detecting means connected to said electrical power source switch to detect an aerial discharge produced across the contacts of said switch upon opening of said electrical power source switch and, upon occurrence of said discharge, to produce a signal; and

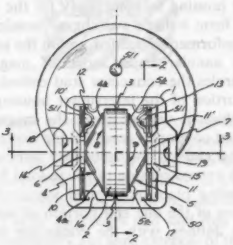
a semi-conductor switch connected in the charging circuit for said storage means and arranged to be opened in response to said signal.

4,241,370

THERMAL RELAYS PARTICULARLY FOR STARTING SINGLE-PHASE ASYNCHRONOUS MOTORS

Pietro De Filippis; Amedeo Salvatore; Luigi Trama, all of Naples, and Giuseppe Notaro, Pomigliano D'Arco, all of Italy, assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed Nov. 14, 1978, Ser. No. 960,671
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—24 **11 Claims**



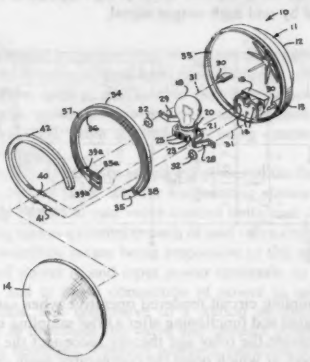
1. A thermal relay particularly for starting single phase asynchronous motors comprising a housing, a resistor of a material of positive temperature coefficient of resistivity within the housing, and resilient electrically conducting metal contact means disposed between the housing and respective opposite sides of the resistor for connecting the resistor in an electrical circuit, the contact means having portions of a metal material of relatively high thermal resistance retarding heat transfer from the resistor to the housing through the contact means, said contact means including relatively thin spring portions formed of said metal material having said high thermal resistance to provide a thermal barrier between the resistor and housing, the thin spring portions being formed of stainless steel to be disposed in firm electrical engagement with the opposite sides of the resistor while forming said thermal barrier.

4,241,371

SINGLE FILAMENT, DUAL FUNCTION, VEHICLE SIGNAL LAMP

Howard A. Sage, Laguna Hills, Calif., assignor to Truck-Lite Company, Inc., Falconer, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,803
Int. Cl.³ B60Q *1/04*
U.S. Cl. 362—61 **15 Claims**



1. A single filament dual function vehicle signal lamp assembly adapted to be connected to vehicle safety light signalling or illuminating circuits to serve functions previously served by dual filament vehicle lamps including tail and stop/turn lamp functions and the like, comprising a rear backing housing member serving as a reflector and lamp housing having a forwardly facing cavity bounded by a concavely curved reflector surface, a lens cover member joined about its perimeter to the housing member to cover said cavity, a single filament lamp bulb in said cavity, a generally flat annular electronic circuit board mounted in said housing in the form of an interrupted ring shaped to encircle said cavity and reflector surface inwardly adjacent the lens cover, at the perimeter of the cavity, said circuit board having a pair of unidirectionally conductive diodes and an elongated resistor element rigidly mounted on said board and connected to said lamp bulb and to external connectors to be interconnected with tail and turn/stop control circuits of the associated vehicle, said diodes and resistor element being interconnected to apply a higher voltage to the lamp bulb filament through one diode for turn or stop signal functions at a relatively brighter light intensity and applying a lower voltage to the filament through the other diode and resistor element for tail lamp signal functions at a relatively dim light intensity.

4,241,372

POWER SUPPLY PROTECTIVE CIRCUIT

Kay G. Sears, Keyport, N.J., assignor to Entron, Inc., Morganville, N.J.

Filed Mar. 1, 1979, Ser. No. 16,411
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—72 **7 Claims**

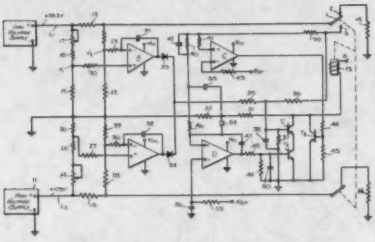
1. A protective system for a D-C power supply delivering current to an external load, the system distinguishing between a transitory overcurrent condition, in which case it functions to momentarily interrupt and then restore current flow, and a genuine overcurrent condition, in which case it functions to

interrupt current flow and continuously maintain this interruption, said system comprising:

A. a current-sensing resistor in series with said supply and said load, whereby the voltage drop developed across said resistor is proportional to the intensity of current drawn by the load;

B. a voltage comparator responsive to said voltage drop to produce a low output signal when the drop reflects a current intensity below a predetermined threshold level and a high output signal when the drop reflects a current intensity at least equal to said level;

C. a relay having normally closed contacts interposed between said resistor and said load, said contacts being opened when said relay is activated to interrupt current flow to the load, said relay being responsive to an activated by said high output signal;



D. a sampling circuit rendered operative when said relay is activated and functioning after a brief sampling interval to de-activate the relay and thereby reconnect the supply to the load, at which point the comparator again determines whether the existing current drain is still excessive, in which event a high output signal is produced and the relay again activated to cut off the supply and to repeat the sampling cycle; and

E. a timing-out circuit operating in conjunction with the sampling circuit and permitting sampling cycles to repeat as long as an overcurrent condition is sensed for a timing-out period which is a multiple of the sampling interval, the timing circuit at the conclusion of this period acting to reactivate the relay and cut off the delivery of current and to thereafter hold the relay in its activated state.

4,241,373

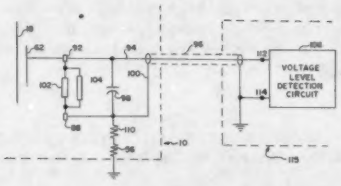
SWITCHGEAR VOLTAGE SENSOR

Eugene G. Mara, Oak Creek; John A. Schreiber, Hartland, and William N. LeCourt, Milwaukee, all of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 30, 1979, Ser. No. 25,500

Int. Cl.[3] **G01R** *15/04, 5/00*

U.S. Cl. 361—92 **26 Claims**



19. Switchgear apparatus for a high voltage alternating electric system which includes a grounded support structure and at least one encapsulated, single phase, circuit interrupter assembly which is affixed to the grounded support structure, and which comprises:

a vacuum interrupter having a fixed contact rod extending through one end of a vacuum enclosure and a movable contact rod extending through an opposite end of the vacuum enclosure, the movable contact rod being movable along its axis between an open position and a closed position, adjacent ends of the fixed contact rod and the movable contact rod carrying respective contacts which abut against each other when the movable contact rod is disposed in its closed position, and which are separated by a suitable distance when the movable contact rod is disposed in its open position;

a first connector stud, having one end attached to the fixed contact rod and an opposite end;

a second connector stud, having one end which carries a current exchange assembly in sliding contact with the movable contact rod, and an opposite end;

an interrupter housing of cast, electrically insulating material which includes

a central portion cast about the vacuum interrupter and defining an opening through which the movable contact rod extends,

a first end portion extending from the central portion and cast about the first connector stud, having a free end through which the opposite end of the first connector stud extends, the free end of the first end portion defining a first receiving bushing member, and

a second end portion extending from the central portion and cast about the second connector stud, having a free end through which the opposite end of the second connector stud extends, the free end of the second end portion defining a second receiving bushing member;

a first conductive coating, which is applied to the outer surface of the interrupter housing intermediate the first and second receiving bushing members, and which defines an uncoated window area, or opening in the first conductive coating, on the outer surface of one of the two end portions of the interrupter housing;

a mounting means for affixing the interrupter housing to the grounded support structure and electrically connecting the first conductive coating to the grounded support structure;

an annular-shaped second housing of cast electrically insulating material, having an inner peripheral surface extending about the one end portion of the interrupter housing over the uncoated window area thereof, and external side and outer peripheral surfaces, the second housing being affixed to the interrupter housing by electrically insulating material which is cast between the inner peripheral surface of the second housing and the outer surface of the interrupter housing to completely fill the space therebetween and form a single switchgear housing;

a current transformer embedded within the second housing, having an annular-shaped core of magnetic material which encircles the connector stud embedded within the one end portion of the interrupter housing, a secondary winding which is wound about the magnetic core, and two insulated conductor leads having first ends connected to respective ends of the secondary winding and second ends which extend outside of the second housing;

a voltage sensing plate, positioned adjacent the uncoated window area of the one end portion of interrupter housing, which defines, with the connector stud embedded within the one end portion of the interrupter housing, a first capacitor wherein the cast electrically insulating material between the voltage sensing plate and the connector stud embedded in the one end portion of the interrupter housing is a dielectric of the first capacitor;

a conductive member, having a first end which is embedded in the second housing and a second end which extends through an external surface of the second housing;

a second capacitor, embedded within the second housing, having a first side connected to the voltage sensing plate and an opposite second side connected to the conductive member, the second capacitor having a low impedance relative to the impedance of the first capacitor;

a coaxial lead, which includes a center conductor and an

outer conductive shield, each having corresponding first ends and opposite second ends, the first end of the center conductor being connected to the first side of the second capacitor, and the first end of the outer shield being connected to second side of the second capacitor, the coaxial lead extending outside of the second housing through an external surface of the second housing;

a second conductive coating, applied to the external surfaces of the second housing and to the adjacent coated surfaces of the one end portion of the interrupter housing, and to the externally extending second end of the conductive member, wherein the first and second conductive coating define a resistive current path between the conductive member and ground which has a low impedance relative to the impedance of the first capacitor, and the first capacitor, the second capacitor, and the resistive current path are connected in series between one phase of the alternating electric system and ground;

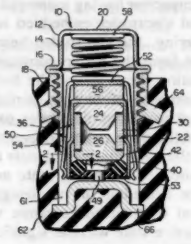
whereby, because of the low impedance of the second capacitor and the resistive current path, both sides of the second capacitor are maintained at a low voltage, and the voltage across the second capacitor is proportional to the one phase-to-ground voltage of the alternating electric system.

4,241,374

SURGE VOLTAGE ARRESTER WITH VENTSAFE FEATURE

Alexander G. Gilberts, Algonquin, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Jan. 29, 1979, Ser. No. 7,363
Int. Cl.³ H02H 3/22, 9/06
U.S. Cl. 361—124 **5 Claims**



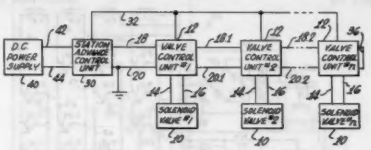
1. A surge voltage arrester assembly comprising a first electrode, second and third electrodes at opposite ends respectively of said first electrode, said electrodes being sealed together and insulated from each other to form a sealed gas tube in which there is a primary arc gap in the tube between each of said second and third electrodes and said first electrode, and means forming secondary arc gaps external of the gas tube and between said first electrode and each of said second and third electrodes, each said secondary arc gap being of the air gap type and having a breakdown voltage greater than the breakdown voltage of either primary arc gap but having a breakdown voltage less than that of each primary arc gap should the gas tube become vented to atmosphere, each secondary arc gap being defined by a rim portion of said first electrode and a surrounding cylindrical element that is in electrical contact with one of said second and third electrodes, and means forming a seal for each secondary arc gap to prevent contaminants from entering each said secondary arc gap, said means forming the seal for each secondary arc gap spanning the space between said cylindrical element and said first electrode.

4,241,375

SEQUENTIAL IRRIGATION CONTROL SYSTEM

Richard L. Ruggles, Mount Baldy, Calif., assignor to Clemar Manufacturing Corp., Azusa, Calif.

Filed Jan. 31, 1979, Ser. No. 7,889
Int. Cl.³ H01H 47/14
U.S. Cl. 361—166 **10 Claims**



1. A sequential irrigation control system comprising:

a plurality of valve control units connectable to corresponding valves, each of said control units having power input terminals, power output terminals, and a station advance terminal, said valve control units being connected in a series string;

central control means for supplying power to the first of said valve control units, and for transmitting station advance control signals to said valve control units; and

switching means included in each of said valve control units, said switching means being responsive to the initial presence of power at said input power terminals, to actuate a valve and to block connection of power to said output terminals, and responsive to a station advance control signal to deactuate the valve and connect power to said output terminals, whereby power is switched from valve control unit to valve control unit along the series string of said units, in response to a sequence of station advance control signals;

and wherein said switching means in each of said valve control units includes

first switching means closeable in response to the initial presence of power at said input terminals to connect power to a valve, and

second switching means coupled with said first switching means, to block transmission of power to said output terminals by remaining open as long as said first switching means is closed,

and wherein said first switching means is opened and remains open in response to a momentary station advance control signal, thereby disconnecting power from the valve and connecting it to said output terminals.

4,241,376

SYSTEM FOR AUTOMATICALLY SELECTING OPERATIONS IN A RANDOM SEQUENTIAL MANNER

Richard J. Ardrey, Nashville, Tenn., assignor to PhotoScan South, Inc., Nashville, Tenn.

Filed May 21, 1979, Ser. No. 40,684
Int. Cl.³ H01H 47/32
U.S. Cl. 361—166 **10 Claims**

1. A system for automatically selecting operations in a random sequential manner comprising:

(a) at least three electrical channel circuits,

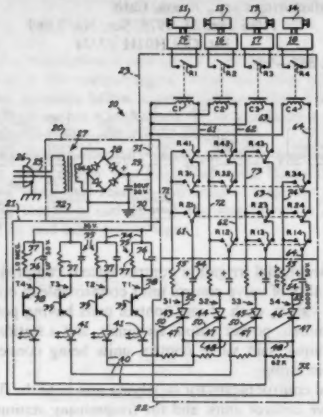
(b) each channel circuit comprising an input circuit, a trigger circuit and an output circuit,

(c) said trigger circuit comprising a timer element and an electrical conductor component exhibiting a negative resistance characteristic connected in series with each other and said input circuit,

(d) the time constants of said timer elements in different channel circuits having different values,

(e) each of said electrical conductor components being adapted to conduct electricity for a period corresponding to the time constant of the corresponding timer element in

the same channel circuit, to produce a corresponding trigger signal during said period, and



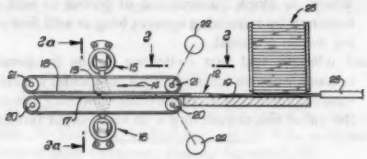
(f) switch means operatively connected to each of said output circuits and actuable by said trigger signals to produce a resultant output signal in only one output circuit at a time in a random sequential manner.

4,241,377

FILM TREATMENT APPARATUS

James M. Cumming, 4571 Comber Ave., Encino, Calif. 91316

Filed Mar. 5, 1979, Ser. No. 17,469
Int. Cl.[3] B08B 7/04
U.S. Cl. 361—213 21 Claims



1. In apparatus for treating a film, the combination comprising

(a) means defining a film treatment zone and including feed means to feed the film endwise into that zone for passage therethrough, and

(b) means including orifices for supplying streams of gas to said zone and closely adjacent opposite surfaces of the film passing laterally through said treatment zone, to disperse dust from said surfaces away from that zone,

(c) means including tips to which voltage is supplied for effecting delivery of ions to come in contact with said film surfaces passing laterally through said zone, said tips associated with said orifices so that said ions are delivered into said gas streams,

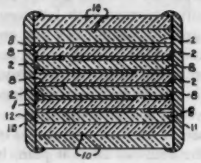
(d) said feed means including an endless conveyor on which film is conveyed within said zone, the conveyor defining an opening through which opposite sides of the film are exposed to said ions and gas streams, the conveyor having spaced support shoulders flatly supporting and positioning edge portions of the film being fed.

4,241,378

BASE METAL ELECTRODE CAPACITOR AND METHOD OF MAKING THE SAME

John F. Dorrian, Erie, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.

Continuation-in-part of Ser. No. 620,244, Oct. 6, 1975, Pat. No. 4,097,911. This application Jun. 12, 1978, Ser. No. 914,553
The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.
Int. Cl.[3] H01G 1/01, 4/12
U.S. Cl. 361—305 24 Claims



1. A method of making a monolithic capacitor having a sintered unitary body of titanate ceramic and electrodes embedded in the body which comprises preparing a green ceramic body with embedded electrodes of metal M, where M is selected from the group consisting of transition metals and/or transition metal alloys, firing the green ceramic body at a temperature to mature the ceramic and in an atmosphere of oxygen partial pressure low enough so that the skins of the electrodes oxidize and react with a major part of the ceramic and prevent reduction of said major part of the ceramic to the semi conductive state and the cores of the electrodes remain in the metallic state and heating the matured ceramic in an oxidizing atmosphere to reoxidize any part of the matured ceramic which is in the reduced semiconductive state without significantly oxidizing the electrodes.

10. A monolithic capacitor having a sintered unitary body of sintered ceramic and electrodes embedded in the green ceramic prior to sintering, the electrodes being of metal M, where M is selected from the group consisting of transition metals and/or transition metal alloys, the body having been matured in an atmosphere of oxygen partial pressure low enough so that the skins of the electrodes oxidize and react with a major part of the ceramic and prevents conversion of said major part into the semi conducting state and the cores of the electrodes remain in the metallic state and the matured ceramic having been heated in an oxidizing atmosphere to reoxidize any part of the matured ceramic which is in the reduced semi conductive state without significantly oxidizing the electrodes.

4,241,379

GAS PRESSURIZED HIGH VOLTAGE SWITCHING INSTALLATION

Willi Olsen, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

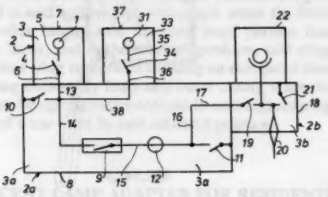
Filed Nov. 22, 1978, Ser. No. 962,927
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754691
Int. Cl.[3] H02B 1/04
U.S. Cl. 361—335 6 Claims

1. In a metal encapsulated, pressurized gas insulated installation for switching at least one high voltage phase and having at least one switchgear section comprising plural adjacent, gas-tight partitioned, pressure tanks accommodating the high-voltage switchgear and other current carrying parts, a current-carrying part of each pressure tank being electrically connected to at least one current-carrying part of an adjacent pressure tank, the improvement comprising:

a first pressure tank containing a switch for a bus bar of the section, at least one bus bar, and conductors connecting

the switch to the bus bar and for connection to a current-carrying part of an adjacent tank;

a second pressure tank containing at least one power circuit breaker, at least one current transformer, at least one grounding switch, and conductors connecting the circuit breaker, the current transformer, and the grounding switch to each other and to a current-carrying part of at least one other pressure tank of the same section, the second pressure tank being elongate and horizontally disposed under the first pressure tank and the power circuit breaker being horizontally disposed therein, with the current transformer and the ground switch positioned on the extended line of the horizontal axis of the power circuit breaker; and



a third pressure tank containing at least one component for the terminal side of the section, the component comprising at least one of a disconnect switch, a cable switch, an overhead line terminating element, and a grounding switch, as well as at least one conductor connecting such component to a current-carrying part of the second tank.

4,241,380

HOUSING FOR AN ELECTRIC CIRCUIT ARRANGEMENT

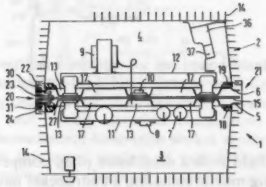
Kjeld Lehmann, Sonderborg, and Arne V. R. Rasmussen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 884,997, Mar. 9, 1978, abandoned. This application Mar. 7, 1979, Ser. No. 18,247

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710432

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—383 **4 Claims**



1. A housing assembly for electrical equipment comprising, external wall means laterally defining an enclosed space, intermediate wall means of a thermally conductive material attached to said external wall means and dividing said enclosed space into at least two laterally enclosed compartments with substantially no lateral fluid communication between any of said compartments, said intermediate wall means forming flue means between at least two of said compartments to provide a chimney effect to direct air upwardly which is warmer than atmospheric air, said flue means having the top and bottom thereof open to the atmosphere externally of said compartments, and said intermediate wall means having electrical components mounted on both sides thereof.

4,241,381

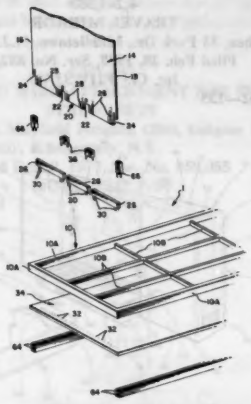
BUS BAR ASSEMBLY FOR CIRCUIT CARDS

Robert F. Cobaugh, Elizabeth, and Attalee S. Taylor, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 4, 1979, Ser. No. 27,130

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—413 **17 Claims**



1. In a power distribution system for multiple circuit cards inserted removably into card receiving openings of card edge connectors, which are mounted on a surface of a circuit board, and which contain signal carrying electrical terminals constructed for electrical engagement with the circuit cards, the improvement comprising:

one or more conductive power bus bars and conductive ground return bus bars extending along said circuit board, and

relatively massive contact terminals directly connecting said circuit cards and said bus bars, said contact terminals being externally of and aligned with respective said card edge connectors to contact respective said circuit cards inserted into said card receiving openings, said contact terminals being connected to respective said bus bars by post portions of said contact terminals force fitted into openings of respective said bus bars.

4,241,382

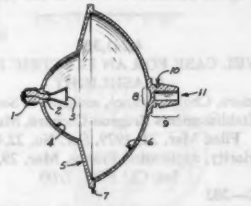
FIBER OPTICS ILLUMINATOR

Maurice Daniel, 550 Jaycox Rd., Avon Lake, Ohio 44012

Filed Mar. 23, 1979, Ser. No. 23,034

Int. Cl.² F21V *7/04, 7/09*

U.S. Cl. 362—32 **26 Claims**



1. A fiber optics illuminator including:

(a) a source of illumination; and

(b) an envelope means enclosing said source of illumination, said envelope means having an optical window means

integrally formed therein for passing illumination from said source of illumination through said envelope means, said envelope means also having inner reflective surface means geometrically shaped to focus substantially all of the illumination from said source of illumination onto said optical window means.

4,241,383

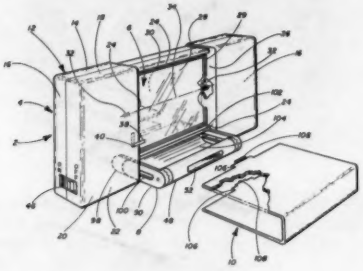
TRAVEL MIRROR

John W. Shea, 33 Park Dr., Middletown, N.J. 07748

Filed Feb. 28, 1978, Ser. No. 882,034

Int. Cl.[2] F21V *33/00*

U.S. Cl. 362—135 **15 Claims**



10. A cosmetic mirror comprising:

(a) a planar rectangular mirror housing having a centrally-located aperture therein and lighting means mounted within said housing, laterally adjacent said adjacent said aperture;

(b) a mirror assembly pivotally mounted within said aperture, said mirror assembly comprising two broad surfaces, said broad surfaces defined by two back-to-back mirrors, one back-to-back mirror having a magnified reflection suface and the other mirror having a normal reflection surface;

(c) a rotatable support stand attachment secured to said housing, said support stand attachment disposed with its axis of rotation parallel to the plane containing said housing, and adjacent to said mirror assembly; and

(d) a cover means for the broad surfaces of said mirror assembly, said cover means detachable attachable to said mirror housing, said cover means adapted to straddle said mirror housing and provide nesting reception for said housing and said mirror assembly when said cosmetic mirror is not being utilized,

Wherein said cover means, when detached from said mirror assembly, is detachable attachable to said support stand attachment and cooperates with said support stand attachment to define an angularly adjustable support stand for independently supporting said cosmetic mirror in a plurality of angular positions relative to the vertical plane.

4,241,384

NOVEL CASE FOR AN ELECTRIC POCKET FLASHLIGHT

Bernard Diziere, Cholet, France, assignor to Societe d'Exploitation des Etablissements Bregeon-Cochard, Maulevrier, France

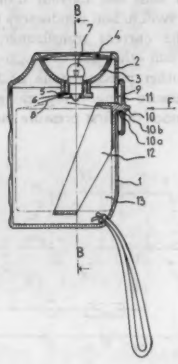
Filed Mar. 21, 1979, Ser. No. 22,457

Claims priority, application France, Mar. 29, 1978, 78 10686

Int. Cl.[3] F21L *7/00*

U.S. Cl. 362—203 **14 Claims**

1. An electric pocket flashlight case comprising means for supporting a flashlight bulb in a position at which at least one contact thereof can be closed by movement of an associated flashlight battery wall means for defining a chamber and for housing therein an associated battery, means for supporting a flashlight battery within said chamber for movement between a first position spaced from the flashlight bulb contact and a second position contiguous thereto, and means for sliding said flashlight battery supporting means between said first and



second positions thereby closing an associated circuit and lighting an associated flashlight bulb upon the movement of a flashlight battery to said second position.

4,241,385

CAR LIGHT WITH DETACHABLE PLUG

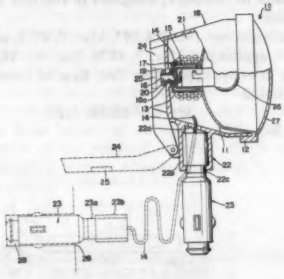
Takehiro Asano, Tokyo, Japan, assignor to Daiichi Shoji Co., Ltd., Tokyo, Japan

Filed May 9, 1978, Ser. No. 904,227

Claims priority, application Japan, May 17, 1977, 52-63427[U]

Int. Cl.[3] F21V *27/00*

U.S. Cl. 362—258 **5 Claims**



1. A car light with a detachable plug, comprising:

a reflecting mirror including a bulb socket having terminals;

a rewindable cord having one end electrically connected to said terminals of said bulb socket;

an outer casing including a hollow plug receptacle formed in an outer wall thereof acting as a guide for said cord and including an open portion adapted to operatively receive a rear portion of said reflecting mirror in a manner whereby said outer casing may rotate relative to said reflecting mirror and said reflecting mirror forming a closure for said open portion of said outer casing;

a reel operatively mounted to said reflecting mirror immediately adjacent said bulb socket in a manner to cover said bulb socket and including a cord hole;

a cord chamber being formed between said reel mounted on said reflecting mirror and said outer casing to form a

substantial area in which said rewindable cord may be encased within said outer casing; and

means for free-standingly mounting said light comprising a plug electrically connected to the other end of said cord and adapted to be operatively received in a cigarette lighter socket of a car, said plug being shaped and sized to be retained in said hollow plug receptacle when said cord is rewound on said reel by turning either said reflecting mirror or said outer casing relative to the other, said plug having a reduced neck portion and a flattened head portion, and said hollow plug receptacle including a cylindrical wall with a leading end formed with a narrowed opening sized and shaped to fittedly, frictionally receive the flattened head portion of said plug so that said plug can be retained in said hollow plug receptacle when the former is turned after having said flattened head portion inserted into the latter, and in the retained position, said plug and said hollow plug receptacle forming an elongated member projecting outwardly from said outer casing wherein said plug may be operatively received in said cigarette lighter socket of a car even in said retained position.

4,241,386

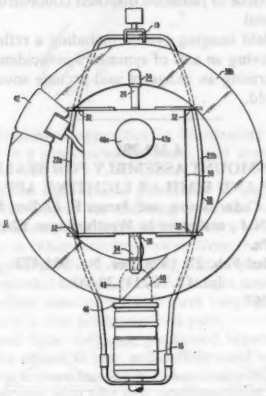
FLUORESCENT LAMP ADAPTER FOR RESIDENTIAL INCANDESCENT-TYPE LAMP FIXTURE

Thomas E. Dooley, Clifton, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 24, 1979, Ser. No. 32,798

Int. Cl.³ F21V *23/00, 23/02*

U.S. Cl. 362—216 **4 Claims**



1. A fluorescent lamp adapter for use in combination with a residential incandescent-type lamp fixture, said fixture comprising an elongated fixture body supported in generally vertical disposition and having electrical conductors associated therewith, an incandescent-lamp-type socket means vertically projecting from the upper portion of said fixture body and operatively receiving said electrical conductors, a lampshade-supporting harp means comprising two elongated members affixed to and supported by said fixture body proximate the upper portion thereof and projecting upwardly in a vertical plane and on opposite sides of said socket means, first to separate and then to return and meet at a location generally directly above said socket means, and a lampshade of predetermined dimensions adapted to be supported by said harp means from the upper portion thereof, said fluorescent lamp adapter comprising:

housing means conformed and adapted to fit into the space defined by said harp means and above said socket means, supporting means adapted for affixing said housing means to said harp means, lamp mounting means affixed to said housing means for engaging and supporting two annular-shaped tubular fluorescent lamps within said lampshade and on opposite sides of the vertical plane defined by said harp means, the axes of said lamps as mounted being substantially horizontal and substantially colinear, electrical ballast means for said lamps retained in said housing means, electrical adapter means connecting said ballast means and adapted to connect to said incandescent-lamp-type socket means, and fluorescent lamp socket means associated with said annular fluorescent lamps and connecting to said ballast means for energizing said lamps.

4,241,387

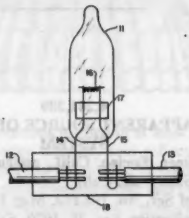
LAMP LEAD TO WIRE ATTACHMENT FOR INTEGRAL STRING SETS

Harry J. Bowers, Mayfield Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,055

Int. Cl.³ F21P *1/00*

U.S. Cl. 362—252 **19 Claims**



1. In a decorative string set having incandescent lamps permanently connected to segments of insulated wire to form a series circuit, the improvement comprising:

each lamp having lead wires in contact with and transverse to the ends of respective segments of said insulated wire;

thermoplastic sheets disposed in an approximately parallel relationship, one on each side of said lead wires and said ends;

and wherein said sheets are thermoplastically bonded to each other and to the insulation on said ends of said insulated wire, said lead wires and segments of said insulated wires are embedded between, partially enclosed and held in electrical contact by said bonded sheets, and said bonded sheets maintain said lead wires and said segments in said electrical contact with a continuous pressure.

4,241,388

HIGH CONTRAST LAMP ASSEMBLY

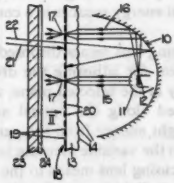
Stanley Green, Smethwick, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 16, 1979, Ser. No. 39,548

Claims priority, application United Kingdom, May 30, 1978, 24567/78

Int. Cl.³ F21V *9/00*

U.S. Cl. 362—268 **22 Claims**



1. A lamp assembly comprising a reflector adapted to re-

ceive a light bulb therein, a first lens element overlying said reflector and having a first surface facing said light bulb and a second surface remote from said light bulb, a multiplicity of individual lenses provided on said first surface of said first lens elements and each having a respective optical axis, a baffle which is made of plate or sheet material and is secured to said second surface of said first lens element, said baffle including a multiplicity of light-transmitting portions, each said light transmitting portion being disposed on said optical axis of a respective one of said individual lenses and being limited in its extent to that necessary to transmit substantially the whole of a pencil of light rays which is focussed by the said respective one of said individual lenses, the remainder of said baffle being at least partially light-obstructing, and a cover positioned on the opposite side of said baffle to said first lens element, said cover having a surface which forms an external surface of said lamp assembly.

4,241,389

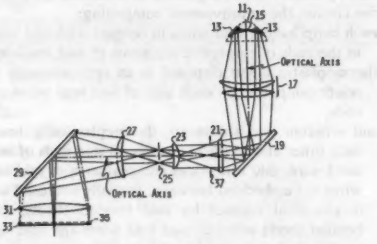
MULTIPLE APPARENT SOURCE OPTICAL IMAGING SYSTEM

Richard J. Heimer, Encino, Calif., assignor to Kasper Instruments, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 798,113, May 18, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,193

Int. Cl.³ F21V 7/09

U.S. Cl. 362—297 **2 Claims**



1. An optical imaging system for uniformly distributing light energy onto a selected plane, the system comprising:

an energy source coaxially disposed along an optical axis of the system;

a paraboloidal assembly of reflectors having an axis of symmetry coincident with the optical axis of the system and being distributed along a plane orthogonally intersecting the optical axis of the system, the reflectors being distributed with respect to each other in a ring about the energy source for receiving light energy from the energy source and uniformly distributing it as if it originated from multiple apparent energy sources in a common apparent source plane;

variable focusing lens means disposed along the optical axis of the system for adjusting the divergence angle of the light energy at the selected plane; and

means disposed along the optical axis of the system for directing light energy from the paraboloidal assembly of reflectors to the variable focusing lens means and from the variable focusing lens means to the selected plane to provide a uniform light energy distribution of multiple apparent energy sources at the selected plane.

4,241,390

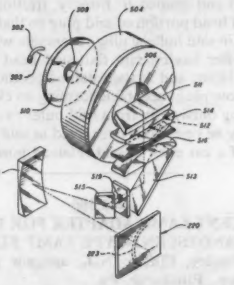
SYSTEM FOR ILLUMINATING AN ANNULAR FIELD

David A. Markle, Norwalk, and Abe Offner, Darien, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 725,351, Sep. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 671,405, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 509,599, Sep. 26, 1974, abandoned. This application Feb. 6, 1978, Ser. No. 875,453

Int. Cl.³ F21V 7/00

U.S. Cl. 362—299 **34 Claims**



1. A system for illuminating an annular field disposed about an axis, comprising, in combination:

an arcuate source of radiation disposed concentrically about said axis; and

an annular field imaging system including a reflective field element having an axis of symmetry coincident with said axis for forming an image of said arcuate source on said annular field.

4,241,391

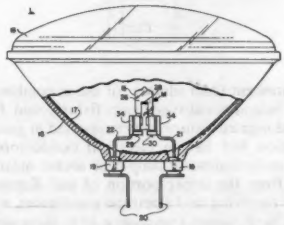
INNER LAMP-MOUNT ASSEMBLY FOR SEALED-BEAM HEADLAMP AND SIMILAR LIGHTING APPARATUS

Elam Pitkjaan, Cedar Grove, and James F. Endler, East Hanover, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,473

Int. Cl.³ F21V 29/00

U.S. Cl. 362—267 **23 Claims**



1. In an electric lamp unit having a housing and substantially rigid main conductors that extend into said housing, the combination of;

a baseless incandescent lamp having an envelope that contains a filament which is connected to substantially rigid lead-in conductors that are anchored in and extend from an hermetic seal that terminates one end of said envelope and has two longitudinal side edges, and

means mechanically and electrically coupling said incandescent lamp to said main conductors and suspending the lamp within said housing including a holder of sheet metal having (a) a first segment that defines a pocket of gener-

ally U-shaped cross-section and is in snug slip-fitted relationship with a side edge portion of the envelope seal, (b) a second segment of hollow tubular configuration that is fastened to one of said main conductors in overlying telescoped relationship therewith, and (c) a third segment that is fastened to one of the lamp lead-in conductors so that the associated main and lead-in conductors are electrically connected to one another by the sheet-metal holder,

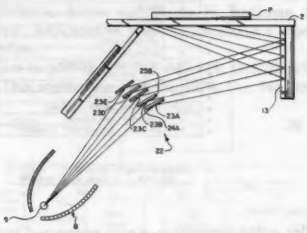
the said third segment of the sheet-metal holder extending laterally along the outer end of the envelope seal and constituting stop means for orienting the incandescent lamp in predetermined interfitted relationship with the holder.

4,241,392

LIGHT DEFLECTOR FOR USE IN ILLUMINATION APPARATUS

Arthur M. Boone, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,284
Int. Cl.³ F21V *7/00*; G03B *27/54*
U.S. Cl. 362—342 **2 Claims**



1. An illumination apparatus for illuminating a planar object positioned in a predetermined plane, said apparatus comprising:

an elongated light source positioned in spaced relationship with the object for emitting radiation some of which verges in a direction toward the object and some of which verges in other directions away from the object;

an elongated parabolic reflecting surface positioned substantially parallel to and adjacent said light source to collimate and reflect some of the light rays verging away from the object in a first predetermined path;

a louvered light deflector positioned between said source and the object to pass and deflect some of the light rays verging toward the object in a second predetermined path intersecting with said first predetermined path; and

a planar reflecting surface positioned in the intersection of said first and second paths to reflect upon the object the collimated light rays reflected from said parabolic reflecting surface and the direct light rays deflected by said light deflector.

4,241,393

AUXILIARY REFLECTOR

Goodwin W. Olson, 1066 El Dorado Dr., Fullerton, Calif. 92635

Filed Jun. 14, 1979, Ser. No. 48,502
Int. Cl.³ F21V *7/20*
U.S. Cl. 362—348 **6 Claims**

1. An auxiliary reflector for correcting the design deficiencies of pre-existing light fixtures having a light source by intensifying the light generated thereby including a reflector member having:

an outer edge thereabout;

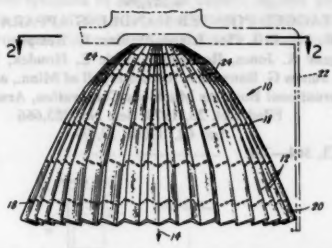
an inner edge which defines an opening therethrough through which the light source can extend;

a layer of reflective material that extends substantially from said inner edge to said outer edge, said layer of reflective material having front and back sides;

a first layer of electrically insulative material which is transparent to light covering said front side of said reflective layer;

a second layer of electrically insulative material covering said back side of said reflective layer, said first and second layers of electrically insulative material extending from said inner edge to said outer edge of said member;

a plurality of perforations formed in at least one circle about said inner edge whereby said reflector member can be modified to have an inner edge of larger diameter by tearing said reflector member along said circle of perforations; and



a plurality of perforations formed in at least one circle adjacent said outer edge whereby said reflector member can be modified to have an outer edge of smaller diameter by tearing said reflector member along said circle of perforations adjacent said outer edge, said perforations extending through said first and second layers of electrically insulative material, said layer of reflective material being electrically conducting and having generally circular cutouts along said circles of perforations whereby tearing of said reflector member along a circle of perforations does not expose said layer of reflective material to electrical contact.

4,241,394

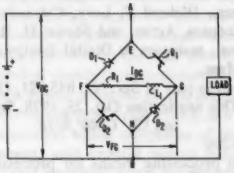
Patent Not Issued For This Number

4,241,395

NON-DISSIPATIVE DC ACTIVE FILTER AND TRANSFORMER

Eric. J. Stacey, Penn Hills, and Andress Kernick, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 959,043
Int. Cl.³ H02J *1/02*
U.S. Cl. 363—39 **9 Claims**



1. A direct current transformer for converting a first DC voltage source V_{DC} into a second DC voltage source V_o comprising:

inductive transformer means having a primary N_1 and a secondary N_2 winding;

means Q_1, D_1 for sequentially and alternatively connecting said primary winding across the terminals of said first DC voltage source in opposite directions relative to the polarities of said first source terminals and in phase opposition to a ripple from said first DC voltage source, thereby to maintain a predetermined voltage ratio due to energy passing through said primary winding; and

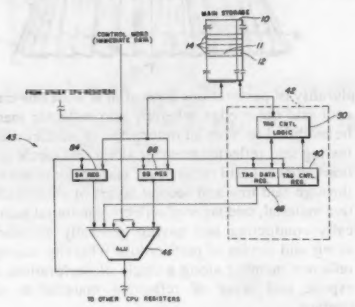
rectifier means connected across said secondary winding for providing said second DC voltage source at two terminals thereof.

4,241,396

TAGGED POINTER HANDLING APPARATUS

Glen R. Mitchell, Pine Island; William G. Kempke, Rochester; Eugene R. Jones, Rochester; Merle E. Houdek, Rochester, and James G. Ranweiler, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,666
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **16 Claims**



3. Tagged pointer handling apparatus for loading and verifying the validity of the tags in a data processing system comprising:

addressable main storage means divided into addressable areas where each addressable area has a tag bit position;

first register means connected to said main storage means for storing data read from and to be written into said addressable areas including said tag bit position;

second register means for accumulating a number of tag bits as data from a number of said addressable areas are read into said first register means; and

signal means for generating an error signal when any of said number of tag bits accumulated in said second register means is not in a predetermined state, whereby an error signal is provided to indicate when a pointer is invalid.

4,241,397

CENTRAL PROCESSOR UNIT FOR EXECUTING INSTRUCTIONS WITH A SPECIAL OPERAND SPECIFIER OF INDETERMINATE LENGTH

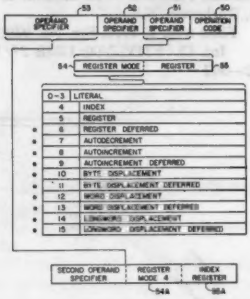
William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,051, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,454
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **9 Claims**

1. A central processing means for processing operands in response to the instructions in a data processing system that additionally includes a memory means for storing the operands and instructions, at least one instruction comprising an operation code for specifying an operation to be performed and an operand specifier for identifying a location in the data processing system for an operand, an operand specifier including at least one information byte and including, in a first information byte thereof, a register mode portion and, for certain register modes, a register selection portion, the register mode portion establishing one of a plurality of addressing operations including an indexed addressing operation, said central processing means including:

A. general purpose register means including a plurality of general purpose registers, one of said general purpose registers being selected in response to the register selection portion of an operand specifier;

B. instruction decoder means connected to said general purpose register means and responsive to an operand specifier for establishing an indexed addressing operation when the register mode portion has a predetermined value, said operand specifier including a designation for identifying a general purpose register;



C. index value generating means connected to said general purpose register means and said instruction decoder for generating an index value in response to the contents of said designated general purpose register during an indexed addressing operation;

D. base address value generating means connected to said general purpose register means and said instruction decoder for generating a base address value in response to information in successive byte locations in the operand specifier during an indexed addressing operation, and

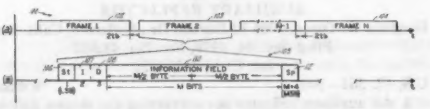
E. means connected to the index value and base address value generating means for generating an indexed address for an operand in response to the index value and base address value during an indexed addressing operation.

4,241,398

COMPUTER NETWORK, LINE PROTOCOL SYSTEM

Richard T. Carli, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 29, 1978, Ser. No. 947,298
Int. Cl.³ H04L *7/02*
U.S. Cl. 364—200 **3 Claims**



1. A method of exchanging digital signal information asynchronously between a central processing unit (CPU) and one or remote processing units (RPU), each alternating as a sending unit and a receiving unit, comprising the steps:

formatting the digital signal information at the sending unit into one or more message units, each having one or more successive serial bit cell data frames and a cyclic redundancy checking (CRC) frame, all of equal bit length, each frame including, from the least significant bit (LSB) to the

most significant bit (MSB), a header field, an information field, and a trailer field, the header including a single bit (LSB) start flag and a two bit identification flag, the information field including multi-bit first and second bytes for receiving the signal information and CRC information in related frames, and the trailer field including a single bit (MSB) stop flag;

encoding each message unit into a serial bi-phase signal with a signal level transistion in each bit cell of each frame, the direction of signal level transition being dependent on the binary state of the signal bit in the cell, thereby providing a manifestation of the digital signal information and time base provided by the sending unit;

transmitting the bi-phase signal to the receiving unit through a transformer coupled communication line; and

decoding the bi-phase signal at the receiving unit to restore the binary state of each signal bit and the time base of the sending unit.

4,241,399

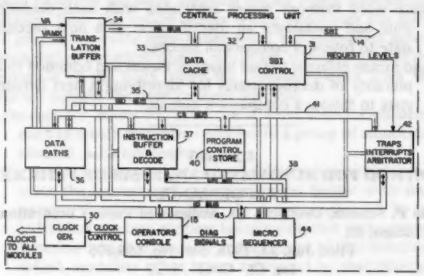
CALLING INSTRUCTIONS FOR A DATA PROCESSING SYSTEM

William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,416, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,602

Int. Cl.³ G06F *9/42*

U.S. Cl. 364—200 **20 Claims**



1. A central processor for a data processing system which system further includes a memory for storing instructions that are grouped in routines, at least one routine constituting a subroutine for processing information in an argument list, the first memory location of the subroutine storing a subroutine mask, and at least one other routine in the memory being a calling routine that utilizes the subroutine and that contains a subroutine calling instruction that includes an operation code, a first operand specifier for identifying a representation of the argument list to be passed from the calling routine to the subroutine and a second operand specifier for identifying the location of the subroutine mask in the memory, said central processor comprising:

A. general purpose register means including:

i. a plurality of general registers, the subroutine mask in the subroutine designating those of said general registers to be used by the subroutine,

ii. a program counter register for addressing instructions in the memory, and

iii. a stack pointer register for addressing locations in a memory stack including a block of consecutive memory locations,

B. instruction decoding means for decoding the instruction operation codes,

C. operand retrieval means connected to said instruction decoding means for decoding the first operand specifier from the subroutine when said instruction decoding means decodes an operation code as a subroutine calling instruction,

D. control means connected to said general purpose register means, said instruction decoding means and said operand retrieval means for controlling the response of said central processor to the subroutine calling instruction and to the subroutine mask, said control means including means connected to said instruction decoding means and said general purpose register means for storing the contents of said program counter register and those general registers designated by the subroutine mask in the memory stack at locations specified by said stack pointer register prior to the execution of the subroutine thereby automatically to save processor state information for the calling routine.

4,241,400

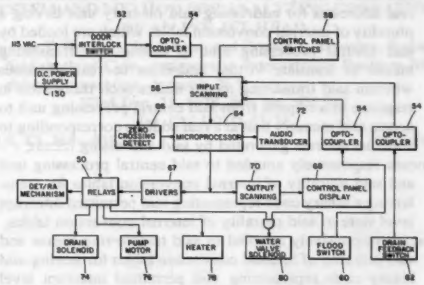
MICROPROCESSOR BASED CONTROL CIRCUIT FOR WASHING APPLIANCES

George E. Kiefer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 18, 1978, Ser. No. 970,697

Int. Cl.³ G05B *19/04*

U.S. Cl. 364—400 **15 Claims**



9. In a washing appliance having electro-mechanical means for filling, circulating, and draining water in said appliance, the electro-mechanical means for draining having a first position in which draining is prevented and a second position in which draining is enabled, a control circuit comprising:

(a) control means for controlling the electro-mechanical means;

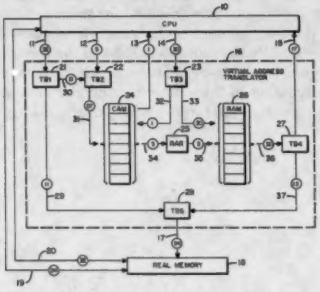
(b) input means permitting user selection of desired operating cycles and including means for communicating with said control means to permit said control means to determine the cycles selected by the user and to control the electro-mechanical means in accordance therewith, and

(c) drain feedback means constructed and arranged to monitor said electro-mechanical drain means and operative to produce an electrical signal indicative of the position of said drain means, said control means including means responsive to said electrical signal for detecting and identifying a plurality of drain means malfunctions and effecting a change in the selected operating cycle if necessary to prevent water overflow and damage to the appliance.

4,241,401
VIRTUAL ADDRESS TRANSLATOR UTILIZING INTERRUPT LEVEL CODE

Robert C. De Ward, Burnsville; David G. Kaminski, Eagan, and Mickiel P. Fedde, Apple Valley, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 861,798
Int. Cl.[3] G06F 9/32, 13/00; G11C 9/06
U.S. Cl. 364—200 3 Claims



1. In a data processing system

which includes a central processing unit capable of operation in one of a plurality of interrupt level states and having an addressing means providing virtual addresses, and which also includes a memory unit with a plurality of locations each addressable by a real address, the improvement comprising:

means responsively coupled to said central processing unit and said memory unit for translating virtual addresses to real addresses for addressing said memory unit having a plurality of internal conversion tables which are loaded by said central processing unit to enable said translating means to translate virtual addresses to real addresses wherein said translating means makes such translation in response to a request from said central processing unit to access said memory unit at a real address corresponding to a virtual address generated by said addressing means;

means responsively coupled to said central processing unit and said plurality of internal conversion tables for transferring a binary code representing said permitted interrupt level state to said plurality of internal conversion tables;

means responsively coupled to said transferring means and said plurality of internal conversion tables for storing said binary code representing said permitted interrupt level state wherein said storing means stores said binary code whenever said plurality of internal conversion tables are loaded by said central processing unit;

means responsively coupled to said storing means for accessing said binary code representing said permitted interrupt level state;

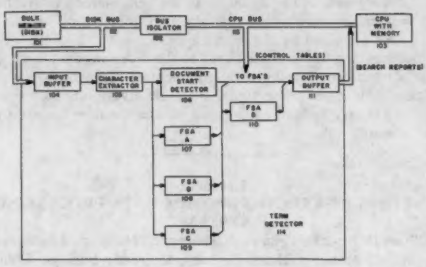
means responsively coupled to said accessing means and said central processing unit for determining whether said binary code representing said permitted interrupt level state corresponds with said one of said plurality of interrupt level states of said central processing unit wherein said determining means makes such determination concurrently with the translation by said translating means of said virtual address to said real address; and

means responsively coupled to said determining means and said translating means for inhibiting the translation of said virtual address to real address within said means for translating virtual addresses to real addresses if said determining means determines that said binary code representing said permitted interrupt level state does not correspond with said interrupt level state of said central processing unit.

4,241,402
FINITE STATE AUTOMATON WITH MULTIPLE STATE TYPES

Victor Mayper, Jr., North Hollywood; Alex L. Nagy, Agourra; Richard M. Bird, Woodland Hills; Ju Ching Tu, Canoga Park, and Lowell S. Michels, Los Angeles, all of Calif., assignors to Operating Systems, Inc., Woodland Hills, Calif.

Filed Oct. 12, 1978, Ser. No. 950,715
Int. Cl.[3] G06F 7/22
U.S. Cl. 364—200 40 Claims



1. In a finite state automaton (FSA) responsive to a stream of input digital code elements and capable of existing in any one of a plurality of alternative states which include a plurality of decision states, the FSA stepping automatically from each decision state to a next success state or to a next default state in response to a comparison of an input code element and a code value for the existing state; the combination of

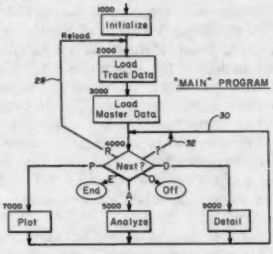
state word memory means associated with each decision state and containing an identification of a next success state to follow a comparison success,

and means external to said memory means and common to a plurality of decision states for identifying a next default state to follow a comparison default.

4,241,403
METHOD FOR AUTOMATED ANALYSIS OF VEHICLE PERFORMANCE

John P. Schultz, Deerfield, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Jun. 23, 1976, Ser. No. 699,075
Int. Cl.[3] G06F 15/20
U.S. Cl. 364—300 27 Claims



1. A method of analyzing performance data recorded on board a vehicle, the method comprising the steps;

communicating the recorded performance data to a storage medium remote from the vehicle;

converting the data in the storage medium to a preselected format;

loading the formatted data into a computer;

loading master data, representing a known performance profile, into the computer; and

comparing the performance data with master data in the computer, under the control of a program for deriving analytical results regarding performance.

4,241,404

DEVICE FOR COMPUTED TOMOGRAPHY

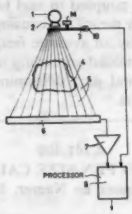
Peter Lux, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,596

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756659

Int. Cl.³ G01N *21/00*

U.S. Cl. 364—414 **19 Claims**



1. In a device for determining the absorption distribution in a body; of the type comprising substantially point-shaped source means which generate radiation in separate beams which penetrate the body, detector means which measure the radiation from the source means which penetrates the body and generate detector signals therefrom, and processing means which derive electrical signals which are representative of the absorption of the body along the radiation beams from the detector signals, the improvement wherein:

the detector means comprise one or more detector elements each of which measures radiation in a group of adjacently situated radiation beams;

the device further comprises modulation means which modulate the intensity of radiation in the beams with time varying functions, each of the beams measured by an individual detector element being modulated by a separate function which is linearly independent of the functions which modulate other beams measured by that detector element; and

the processing means derives individual signals which correspond to the intensity in each of the radiation beams in a group from the output of the associated detector element by multiplying discrete signal values received from the detector element by a matrix of values which is the inverse of the functions used to modulate the beams in the group.

4,241,405

DATABASE UPDATING APPARATUS

Michael A. Allocca, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 7, 1978, Ser. No. 931,500

Int. Cl.³ G01G *23/22*

U.S. Cl. 364—466 **9 Claims**

1. In combination with a postal scale, and means for receiving signals, wherein said signal receiving means includes means for semi-permanently storing data in a postal rate database, and said signal receiving means is adapted for receiving signals corresponding to a weight on the scale, apparatus for updating said database comprising:

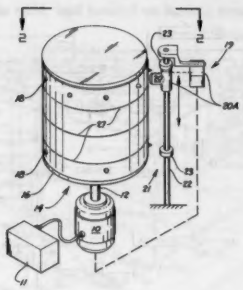
a. means for reading magnetically recorded data;

b. means for interrupting said signals which correspond to a weight on the scale;

c. said storing means coupled to said reading means for storing data received therefrom in said database;

d. a rotatable drum having an exterior circumferentially-extending surface; said drum including a plurality of protrusions extending beyond said exterior surface;

e. a flexible card including postal rate data magnetically recorded on a major surface thereof, said card having a plurality of apertures formed therein, said apertures located to permit registration of apertures with said protrusions for properly mounting said card on said drum for rotation therewith; and



f. said reading means including a read head disposed in reading relationship with respect to said card's major surface while said card is mounted on said drum.

4,241,406

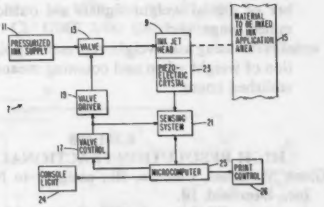
SYSTEM AND METHOD FOR ANALYZING OPERATION OF AN INK JET HEAD

Eugene T. Kennedy, Longmont, and Donald L. Janeway, Broomfield, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,967

Int. Cl.³ G01D *15/18*

U.S. Cl. 364—518 **80 Claims**



1. A system for analyzing operation of an ink jet head from which ink is ejected due to pressure within said head, said system comprising:

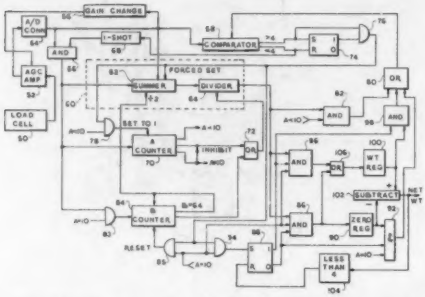
sensing means for sensing the pressure characteristic in the ink jet head during a predetermined pressure change period; and

determining means connected with said sensing means for determining pressure build-up within said ink jet head to thereby detect faults in performance of said ink jet head based upon said pressure characteristics sensed by said sensing means.

4,241,407
ELECTRONIC SCALE

Dennis M. Sookikian, Oak Park, Ill., and Dumitru Gudea, Whittier, Calif., assignors to Triner Scale and Manufacturing Co., Chicago, Ill.

Filed Jun. 14, 1979, Ser. No. 48,388
Int. Cl.[3] G06F 11/02; G01G 19/413
U.S. Cl. 364—567 23 Claims



1. Apparatus for providing an indication of weight, comprising:

a load cell for producing an output signal as a function of the weight of an object;

means for providing successive digital weight signals corresponding to time-samples of said output signal;

combining means for combining the digital weight signals to produce a weight-representing signal representing the statistical approximation of the actual weight;

comparator means for comparing the latest digital weight signal to said weight-representing signal to determine if the difference therebetween is within a predetermined range and for adding said latest digital weight signal to said statistical approximation if said latest digital weight signal is within said predetermined range;

counting means for counting the number of digital weight signals which are provided and which are within said predetermined range;

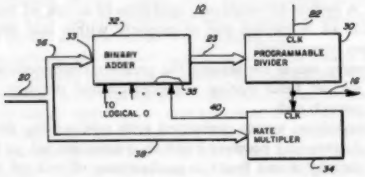
means for resetting said counting means to a predetermined count and for clearing said combining means to produce a new weight-representing signal when a preselected number of digital weight signals are outside said predetermined range; and

means for using said weight-representing signal as an indication of weight when said counting means reaches a preestablished count.

4,241,408
HIGH RESOLUTION FRACTIONAL DIVIDER

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Apr. 4, 1979, Ser. No. 26,953
Int. Cl.[3] G06F 7/68; H03K 21/36
U.S. Cl. 364—703 5 Claims



1. A high resolution fractional divider comprising:

means for generating a clock signal;

means for selectively developing a multibit control word comprising a group of most significant bits and a group of least significant bits;

programmable divider means having a clock input, a divisor control input and an output developing an output signal;

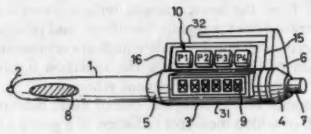
means coupling said most significant bits to said divisor control input and said clock signal to said clock input; and

means developing a product signal chopped by said output signal and representing the expression F_o(LSB/N), where F_o represents the frequency of said output signal, N is a predetermined interger and LSB is an integer representing the value of said group of least significant bits, said product signal operating said coupling means for modifying one of the signals coupled to said two inputs of said programmable divider means for causing said output signal to be characterized by an average frequency comprising an integral part determined according to said most significant bits and a fractional part determined according to said least significant bits.

4,241,409
HAND HELD PEN-SIZE CALCULATOR

Jean-Marie Nolf, Chaussee de Namur, 6, Hamme-Mille, Belgium

Filed Dec. 27, 1978, Ser. No. 973,616
Claims priority, application Belgium, Dec. 30, 1977, 184007
Int. Cl.[3] G06F 3/033
U.S. Cl. 364—705 5 Claims



1. A hand held calculator comprising:

an elongated hollow body;

an elongated support extending lengthwise and resiliently mounted in the body, said support having a writing head mounted at one end thereof and an indicating means at its other end;

an elongated barrel slidably mounted about said support, said barrel being pivotably fixed to said body at two opposite points for defining a pivot axis such that the barrel is capable of pivotal movement about said pivot axis;

a character transducer located in the body for detecting the sense of movement of the writing head across the writing surface as a character is being written on said writing surface and for generating a sequence of signals representing said character, said transducer comprising first detecting means mounted on the body in axial alignment with the support so as to cooperate with said indicating means on the support for generating a first signal in response to the support being moved axially with respect to the body,

second and third detecting means mounted on the body along a transverse axis perpendicular to said pivot axis for detecting the pivotal movement of said barrel about the pivot axis, said second detecting means being operative to generate a second signal indicating the pivotal movement in a first sense, and said third detecting means being operative to generate a third signal indicating the pivotal movement in the opposite sense;

logic means responsive to said first, second and third signals to generate a fourth signal representing the combination of distinct states of said first, second and third signals,

buffer store means for temporarily storing said fourth signal,

reference store means for storing signals each representing a distinct written character,

comparator means connected to accept the content of said

buffer means, compare it to each signal from the reference store means and generate a distinct identification signal when the signal from the buffer means is identical to a signal from the reference store means; and

a calculating unit mounted on the body, said calculating unit having a display area.

4,241,410

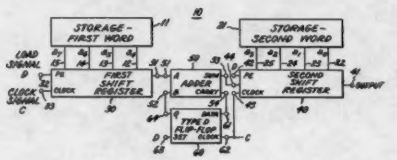
BINARY NUMBER GENERATION

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1979, Ser. No. 22,041

Int. Cl.³ G06F 7/48

U.S. Cl. 364—715 **7 Claims**



1. Apparatus for providing an N bit word representing a series of binary numbers, said series consisting of a major sequence of numbers in which successive numbers are separated by a first fixed increment starting from a minimum value other than zero and a plurality of minor sequences of numbers, each of said minor sequences representing binary numbers of said series lying between respective successive numbers of said major sequence, each number of a minor sequence except for the first number being spaced from a preceding number thereof by a second fixed increment, the first number of a minor sequence being separated from the corresponding preceding number in said major sequence by said second fixed increment and the last number of a minor sequence spaced from the corresponding succeeding number in said major sequence by said second fixed increment,

first means for providing a first binary word of k bits, each of the binary values thereof corresponding to a respective number of said major sequence,

second means for providing a second binary word of N−(k+1) bits, each of the binary values thereof corresponding to a respective number in each of said minor sequences,

adding means for adding a one to said first binary word of k bits to obtain a third binary word of k+1 bits,

constituting means for constituting the bits of said third word as the most significant bits of said N bit word and for constituting the bits of said second word as the least significant bits of said N bit word.

4,241,411

FFT PARALLEL PROCESSOR HAVING MUTUALLY CONNECTED, MULTIPLE IDENTICAL CARDS

Norman F. Krasner, Belmont, and Barry M. Leiner, Sunnyvale, both of Calif., assignors to Probe Systems, Incorporated, Sunnyvale, Calif.

Filed Nov. 16, 1978, Ser. No. 961,116

Int. Cl.³ G06F 15/332

U.S. Cl. 364—726 **19 Claims**

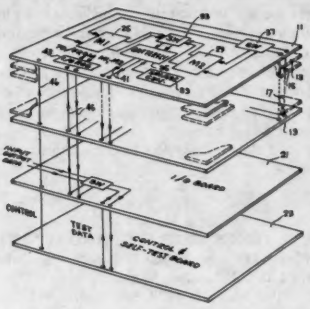
1. In a fast Fourier transform processor of the radix 2 type, utilizing memory units and butterfly units, the construction comprising,

(i) a plurality of identical circuit cards, each card having electrical apparatus for performing operations required by the fast Fourier transform including,

(a) two input ports, a first switching means and first and second memory units connected together for feeding two complex input words one derived from each of two connected circuit cards into said input ports and thence to said switching means and to one of said first and second memory units mounted on each card,

(b) a second switching means and a butterfly unit having inputs and outputs, the inputs connected to the second switching means which is in turn connected to the first and second memory units,

said first switching means for connecting said input ports first to one of said first and second memory units then the other, from one iteration of the fast Fourier transform to the next, said second switching means connecting the one of said first and second memory units, which is not connected to the input ports, to the butterfly unit,



(c) two output ports, each connecting the outputs of said butterfly to one of two cards for feeding one of two complex output words from said butterfly through a first switching means, to a memory unit mounted on each of said one of two cards, and

(ii) a control card having control circuit means connected to said butterfly and memory units of all of said identical circuit cards for controlling fast Fourier transform iterations by said circuit cards.

4,241,412

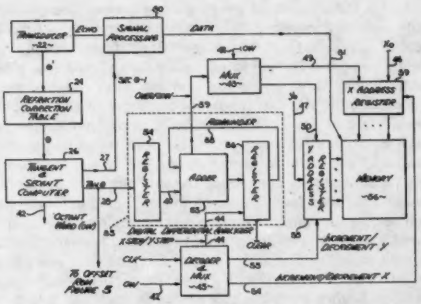
POLAR TO CARTESIAN MAPPING APPARATUS AND METHOD

Allan L. Swain, Whitmore, Calif., assignor to Diasonics, Inc., Sunnyvale, Calif.

Filed Mar. 16, 1979, Ser. No. 21,230

Int. Cl.³ G06F 5/00; G01S 7/44

U.S. Cl. 364—731 **19 Claims**



1. An apparatus for mapping data associated with a plurality of angles into a Cartesian coordinate system having a first and a second axis comprising:

segment indicator means for providing segment signals rep-

resentative of the segment in which each of said plurality of angles is located;

trigonometric function means for providing tangent signals representative of the tangent of each of said plurality of angles and secant signals representative of the secant of each of said plurality of angles;

first differential means for providing locations on said first axis as a function of locations on said second axis, said tangent signals and said segment signals, and also for providing locations on said second axis as a function of locations on said first axis, said tangent signals and said segment signals, said first differential means coupled to sid trigonometric means and said segment indicator means;

second differential means for controlling selection of said data for each of said locations on said first and second axes as a function of said secant signals, said second differential means coupled to said trigonometric means and coupled to control said selection of said data;

whereby said data is mapped into a Cartesian coordinate system.

4,241,413

BINARY ADDER WITH SHIFTING FUNCTION

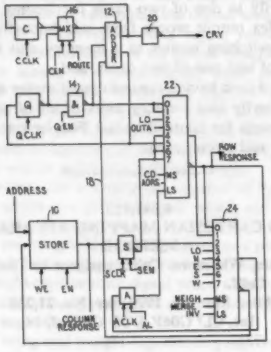
David J. Hunt, Hitchin, England, assignor to International Computers Limited, London, England

Filed Mar. 15, 1979, Ser. No. 20,913

Claims priority, application United Kingdom, Apr. 25, 1978, 16182/78

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—784 **2 Claims**



1. An information processing arrangement comprising a sequence of processing cells, each cell containing first and second single-bit registers, a switching device having two inputs respectively connected to the two registers, a binary adder having three inputs and sum and carry outputs, means for connecting the first input to the output of the switching device, means for connecting the second input to the first register, means for connecting the third input to the carry output of the adder in the preceding cell in the sequence (if any), and means for connecting the sum output to the input of the first register, such that when the switching device in each cell selects the output from the second register, the arrangement is above to perform a parallel addition between first and second multi-bit operands contained in the first and second registers respectively, with ripple carry between adjacent cells, and when the switching device in each cell selects the output from the first register the contents of the first register in each cell can be shifted, via the carry output of the adder in that cell, into the third input of the adder in the next cell of the sequence (if any), and then via the sum output of the adder in that next cell into the first register in that next cell.

4,241,414

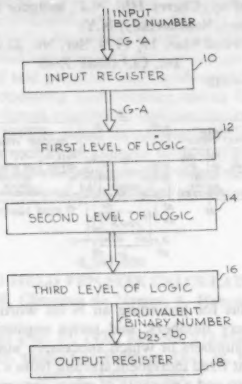
BINARY ADDER EMPLOYING A PLURALITY OF LEVELS OF INDIVIDUALLY PROGRAMMED PROMS

Laurence P. Flora, Covina, and Daniel P. Wiener, Glendale, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 3, 1979, Ser. No. 729

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—786 **12 Claims**



1. In a binary adder for adding a plurality of columns of input binary signals, the combination comprising:

a first level of logic circuitry including a plurality of individually programmed PROMs;

each PROM of said first level being programmed to provide PROM output binary signals representing the addition of a predetermined plurality of said binary input signals taking into account their column locations;

each PROM of said first level being of a size such that no carry is generated therefrom in response to the addition performed on the binary signals applied thereto; and

a second level of logic circuitry to which output binary signals from said first level are applied, said second level including a plurality of individually programmed PROMs;

each PROM of said second level being programmed to provide PROM output binary signals in response to a predetermined plurality of binary signals applied thereto chosen from the PROM output binary signals provided by said first level and any not yet added input binary signals;

each PROM of said second level being of a size such that no carry is generated therefrom in response to the addition performed on the binary signals applied thereto.

4,241,415

MASKING DEVICE FOR SELECTIVELY PREVENTING VISUALIZATION OF DATA FROM A DATA OUTPUT SYSTEM

Katsumi Masaki, Kodaira, and Takashi Kitamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1977, Ser. No. 771,467

Claims priority, application Japan, Feb. 26, 1976, 51-20491

Int. Cl.³ G06F *7/22*

U.S. Cl. 364—900 **29 Claims**

1. A data masking device for use in a system for visualizing output data, comprising:

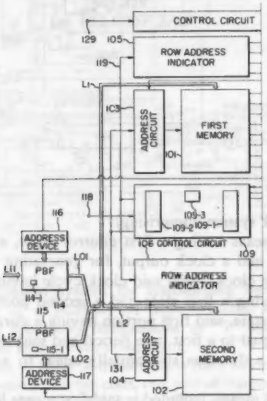
first memory means having a predetermined unit memory capacity for storing information code signals which are convertible into visible information;

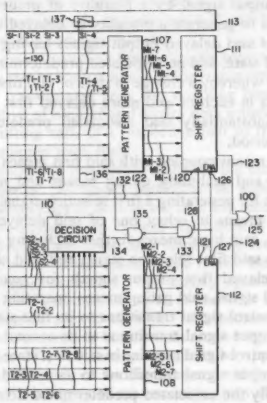
second memory means having at least said predetermined unit memory capacity for storing specific code signals corresponding to information code signals stored in said

first memory means which are not to be converted into visible information;

read-out means connected to said first and second memory means for simultaneously reading out the code signals from said first and second memory means;

output means responsive to the information code signals read out by said read-out means for establishing information code patterns corresponding to the read out information code signals and for converting the information code patterns into visible information;





detection means connected to said read-out means for detecting the presence of a specific code signal in the code signals read out by said read-out means; and

control means, responsive to the detection by said detection means of the presence of a specific code signal, for controlling said output means to prevent conversion into visible information of the information code patterns corresponding to the information code signal which has been read out simultaneously with the detected specific code signal.

4,241,416

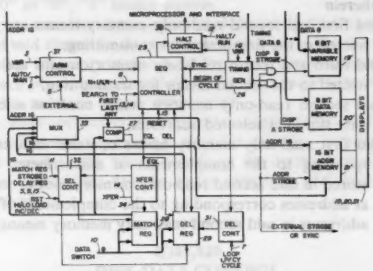
MONITORING APPARATUS FOR PROCESSOR CONTROLLED EQUIPMENT

Zoltan Tarczy-Hornoch, Berkeley, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Jul. 1, 1977, Ser. No. 812,385

Int. Cl.³ G06F *11/30*

U.S. Cl. 364—900 **23 Claims**



1. Apparatus for monitoring processor controlled digital equipment which is characterized by having timing cycles and generating predominantly sequential parallel multiline address signals on a bus, said apparatus comprising: incrementable register means for storing a register bit pattern representing an address; comparing means connected to said register means and to said bus for providing repetitive comparisons, in response to said timing cycles, between said register bit pattern and said multiline address signals of said digital equipment; means connecting said comparing means to the input of said register means for incrementing by a constant said address represented in said register means in response to each unequal comparison; and memory means connected to said bus to receive signals therefrom, said memory means serving to store in response to the first equal comparison an additional bit pattern which represents a state of said address signal on said bus, whereby the apparatus obtains information about the operation of said digital equipment.

4,241,417

CIRCUITRY FOR OPERATING READ-ONLY MEMORIES INTERROGATED WITH STATIC BINARY ADDRESSES WITHIN A TWO-CHANNEL SAFETY SWITCH MECHANISM HAVING ANTI-VALENCY SIGNAL PROCESSING

Alexander Pauly, Koenigslutter, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 681,513, Apr. 29, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 836,098

Claims priority, application Fed. Rep. of Germany, May 13, 1975, 2521245

Int. Cl.³ G06F *11/08, 11/18;* G11C *17/00*

U.S. Cl. 364—900 **6 Claims**

1. In an improved apparatus for continuously checking the bit patterns read out from memory units, wherein the apparatus has a first means for transmitting digital information, forming a digital processing channel, and a second means for transmitting digital information, forming a synchronously operated, complementary, digital processing channel wherein all data and addresses transmitted therein are complements of corresponding data and addresses transmitted in the first means for transmitting, at least first and second digital switching means connected respectively to the first and second means for transmitting, the first and second switching means being dynamically operated alternately in positive and negative logic in successive processing steps, by utilizing rectangular signal voltages of a given frequency and with a 180 degree phase shift for the two logic values 0 and 1 to define switching variables, and means for monitoring connected to the first and second digital switch-

ing means, the means for monitoring continuously senses the valency or anti-valency of output signals generated by the first and second digital switching means based on data values transmitted from the first and second means for transmitting to the first and second digital switching means, and the means for monitoring generates a predetermined alarm signal upon sensing a valency condition, the improvement comprising:

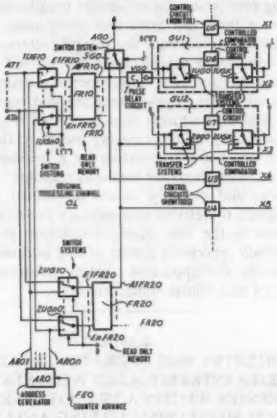
first, second, third and fourth read-only memory means, wherein

said first and second read-only memory means are connected to the first means for transmitting,

said third and fourth read-only memory means are connected to the second means for transmitting,

said second read-only memory means contains selected data stored at selected addresses,

said first read-only memory means contains data corresponding to the complements of said selected data stored in said second read-only memory means, stored at addresses corresponding to the complements of said addresses in said second read-only memory means,



said third read-only memory means contains selected data stored at selected addresses, and

said fourth read-only memory means contains data, corresponding to the complements of said selected data stored in said third read-only memory means, stored at addresses corresponding to the complements of said addresses in said third read-only memory means; and

means for alternately connecting said first and said second read-only memory means to said first means for transmitting and for alternately connecting said third and said fourth read-only memory means to said second means for transmitting, said means for alternately connecting operates alternately in positive and negative logic in successive processing steps, whereby data from corresponding addresses of said first and third read-only memory means are read out and sensed for anti-valency by the means for monitoring during a first processing step and data from corresponding addresses of said second and fourth read-only memory means are read out and sensed for anti-valency by the means for monitoring during a second processing step.

4,241,418

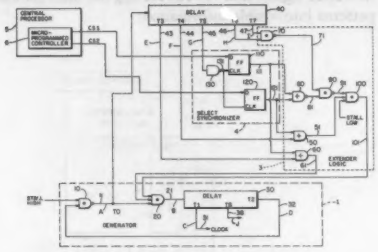
CLOCK SYSTEM HAVING A DYNAMICALLY SELECTABLE CLOCK PERIOD

Philip E. Stanley, Westboro, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 23, 1977, Ser. No. 854,301

Int. Cl.[3] H03K *5/04, 5/159*

U.S. Cl. 364—900 **17 Claims**



1. A clock system comprising:

(a) first means having a first control input, a first control output, and a clock output, for generating at said clock output a clock cycle, said clock cycle having a first portion having a first state and a second portion having a second state, said first portion having a duration substantially equal to a first time period and said second portion having a duration substantially equal to a second time period;

(b) second means, included in said first means for generating a first output signal at said first control output of said first means, said first output signal having a first state and a second state;

(c) third means coupled to said first means for delaying said first output signal by a plurality of predetermined time periods to generate a plurality of delayed output signals, each of said delayed output signals having a first state, a second state, and an associated predetermined time delay period whereby a change in state of said first output signal appears in each of said more delayed first output signals after substantially said associated predetermined delay time period;

(d) logic means coupled with said first means and said third means and including gating means and means coupled thereto for generating a first selection signal to enable said gating means to select one of said delayed first output signals, said logic means further including means responsive to said first selection signal and said selected one of said delayed first output signals for generating a first control signal, said gating means operating such that said first control signal transitions to its first state before said first output signal transitions to its second state and said first control signal remains in said first state until after said first output signal transitions to its second state for substantially the associated predetermined delay time period of said selected delayed first output signal;

(e) means included in said first means for generating said clock cycle such that said first time period is substantially equal to said second time period plus the associated predetermined delay time period of said selected delayed first output signal; and

(f) fourth means included in said first means for receiving said first control signal at said first control input of said first means, said first control signal having a first state and a second state, said first state operative to disable said first means from generating said second portion of said clock cycle and said second state operative to enable said first means to generate said second portion of said clock cycle, whereby a change in said first control signal from said first

state to said second state enables the generation of said second portion of said clock cycle.

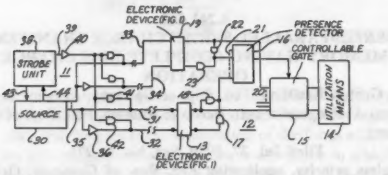
4,241,419
ASYNCHRONOUS DIGITAL DATA TRANSMISSION SYSTEM

Reinhard K. Kronies, Fountain Valley, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 742,745, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 519,831, Nov. 1, 1974, abandoned, which is a division of Ser. No. 123,959, Mar. 15, 1971, Pat. No. 3,742,253. This application May 1, 1978, Ser. No. 901,870

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **4 Claims**



1. A transmission system for transmitting binary signals representative of a plurality of asynchronous binary data source signals arbitrarily designatable as "1" and "0" to a utilizing means, said system comprising:

(a) a plurality of pairs of transmission lines having transmitting ends and receiving ends, one pair of transmission lines being provided for each binary data source signal, each pair of transmission lines comprising first and second lines;

(b) a strobe source providing a binary strobe source signal concurrently with the provision of said binary data source signals, the binary value of said binary strobe source signal indicating whether or not transmission to said utilization means of binary signals representative of said binary data source signals is to be permitted;

(c) coupling means coupling binary signals representative of said binary strobe source signal to the transmitting ends of all of said transmission lines and coupling binary signals representative of each of said binary data source signals to the transmitting ends of a respective pair of transmission lines in a manner such that:

(1) the presence of one binary value of the binary strobe signal causes "1" binary signals to be applied to the transmission ends of both of the first and second lines of each pair of transmission lines regardless of the binary value of each lines respective binary data source signal,

(2) the presence of the other value of the binary strobe source signal causes "1", "0" binary signals to be applied to the transmission ends of the first and second lines, respectively, of each pair of transmission lines if each lines respective binary data source signal is a "1" or causes "0", "1" binary signals to be applied to the transmission ends of the first and second lines, respectively, of each pair of transmission lines if each lines respective binary data source signal is a "0";

(d) a plurality of electronic devices, one for each pair of transmission lines, each electronic device having first and second input terminals and first and second output terminals said first and second output terminals being designated as the "off" and "on" terminals, respectively, said first and second input terminals being coupled to the receiving ends of the first and second lines, respectively, of a respective pair of transmission lines, each electronic device being constructed and arranged to operate in a manner such that: (1) "1", "1" binary signals applied to its first and second input terminals produce "0", "0" binary signals at its first and second output terminals, (2) "1", "0" binary signals applied to its first and second input terminals, respectively, produce "1", "0" binary signals at its first and second output terminals, respectively, (3) "0", "1" binary signals applied to its first and second inputs, respectively, produce "0", "1" binary signals at its first and second output terminals, respectively, and (4) "0", "0" binary signals applied to its first and second inputs following either "1", "0" or "0", "1" binary signals cause no change in the binary signals at its first and second output terminals produced by the previously applied "1", "0" or "0", "1" binary signals;

(e) presence detection means coupled to the output terminals of said electronic devices and responsive to the detection of a "1" binary signal on at least one output terminal of each of said plurality of electronic devices for providing a data presence output signal; and

(f) means coupled to the output terminals of said electronic devices and responsive to said data presence output signal for causing the binary signals on the output terminals of said electronic devices to be passed to said utilization means.

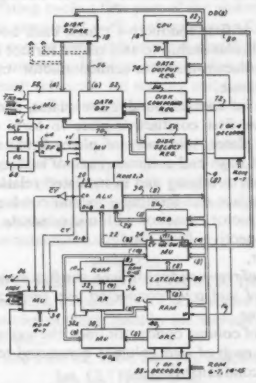
4,241,420
DISK DATA CONTROL

Leonard A. Fish, and Charles E. Fiterman, both of Chicago, Ill., assignors to Bank Computer Network Corporation, Schiller Park, Ill.

Continuation of Ser. No. 746,057, Nov. 29, 1976, abandoned. This application Nov. 1, 1978, Ser. No. 956,723

Int. Cl.³ G06F *13/04*

U.S. Cl. 364—900 **20 Claims**



1. A disk data control device for controlling data transmission between a disk storage device and an external processing unit, said disk data control device having an input terminal connected to said disk storage device, said disk storage device being adapted to manifest stored data and information at said input terminal in sequential blocks of serial bits, said blocks being separated by time gap intervals during which no data or information is so manifested, said disk data control device having data storage means for storing a plurality of bits of data, stored program means for storing digital representations of a program of logical operations to be carried out on said data while said data is resident in said storage means, means for initiating said logical operation only at the beginning of said time gap intervals after said data has arrived in said storage means, and before any transmission of said data to said external processing unit, writing means, connected between said storage means and said input terminal for writing data from said input terminal into said storage means as said data is presented to said input terminal, and operating means connected to said data storage means and to said stored program means and

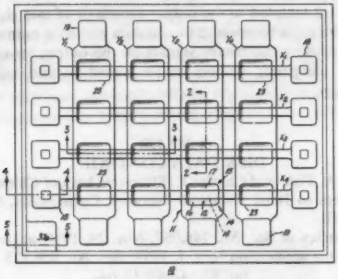
operated by said stored program means for carrying out said program of logical operations on said data while said data is resident in said storage means and before any transfer of said data from said storage means to said external processing unit.

4,241,421

SOLID STATE IMAGING APPARATUS

Hubert K. Burke, Scotia, and Gerald J. Michon, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,850
Int. Cl.³ G11C *11/40*; G11B *11/08*
U.S. Cl. 365—183 **4 Claims**



3. In combination,

a substrate of semiconductor material having a major surface,

a plurality of first conductive plates, each overlying and in insulated relationship to said major surface and forming a first conductor-insulator-semiconductor capacitor with said substrate,

a plurality of second conductive plates, each adjacent a respective first conductive plate to form a plurality of pairs of plates, said pairs of plates being arranged in a matrix of rows and columns, each of said second conductive plates overlying and in insulated relationship to said major surface and forming a second conductor-insulator-semiconductor capacitor with said substrate, each coupled to a respective first conductor-insulator-semiconductor capacitor,

a plurality of row conductor lines, the first conductive plates in each of said rows connected to a respective row conductor line,

a plurality of column conductor lines, the second conductive plates in each of said columns connected to a respective column conductor line,

a first voltage means for providing a first voltage between said row conductor lines and said substrate to deplete the first portions of said substrate lying under said first conductive plates of majority charge carriers and provide an absolute potential of a first value therein,

a second voltage means for providing a second voltage between said column conductor lines and said substrate to deplete the second portions of said substrate lying under said second conductive plates of majority carriers and providing an absolute potential of a second value therein, said second value being greater than said first value,

means for storing charge in said first portions of said substrate,

means for addressing each of said rows of devices in sequence during a respective first period of time,

means for decreasing said second voltage on said column lines to said zero reference level at the end of each of said first periods,

means for increasing said second voltage on each of said column conductor lines in sequence during each of said first periods of time to deplete respective second periods of said substrate lying thereunder of majority charge carriers to provide an absolute potential in said second portions of said second value therein whereby charge stored in each of said first portions of an addressed row of devices transfers into a respective second portion thereof,

means for decreasing said first voltage on the row lines of said addressed row to zero reference level for an interval at the end of the first period thereof after all of said column lines have been reduced to zero reference level to cause charge in said first portions of the substrate associated with said addressed row to be injected into said substrate,

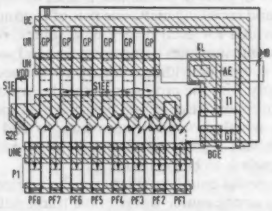
means for sensing in sequence the currents induced on the row line of each addressed row during the transfer of charge from the second portions to the first portions of said substrate associated therewith.

4,241,422

SERIES-PARALLEL-SERIES CHARGE TRANSFER MEMORY HAVING COMPLETE BIAS CHARGE OPERATION

Otto Grüter, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,271
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842856
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—183 **5 Claims**



1. In a series-parallel-series charge transfer memory of the type having a read-in chain of a plurality of first and second alternately arranged charge transfer elements, a plurality of parallel charge transfer devices coupled to receive information charges from the charge transfer elements of the read-in chain, and a read-out chain of a plurality of third and fourth alternately arranged charge transfer elements coupled to receive information charges from the parallel charge transfer devices, the improvement comprising:

a first circuit arrangement assigned to the read-in chain and operable to store bias charges and deliver the bias charges to the read-in chain after information charge transfer to the parallel charge transfer devices; and

a second circuit arrangement assigned to the read-out chain and operable to remove bias charges from the read-out chain prior to receipt of information charges from the parallel charge transfer devices.

4,241,423

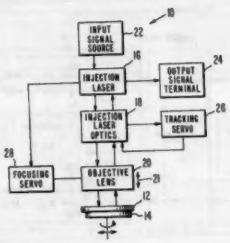
OPTICAL MEMORY WITH INJECTION LASER AS LIGHT SOURCE AND DETECTOR

William J. Burke, Princeton Junction; Henry Kressel, Elizabeth, and Michael Ettenberg, Freehold, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,405
Int. Cl.³ G11C *13/08*
U.S. Cl. 365—215 **7 Claims**

1. An optical memory device which includes an injection laser as a source of radiation and the detector of the reflected

modulated radiation, a memory element adapted to receive the radiation from the injection laser and to reflect back at least some of the radiation modulated by information contained in the memory element, and means for focusing a spot of the radiation from the injection laser onto the memory element, the improvement comprising:



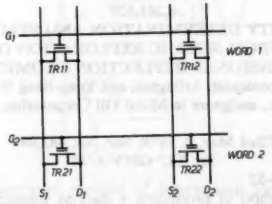
means for modulating the focus of the spot of light, means for detecting variations in a characteristic of the injection laser resulting from the modulation of the focus and means for adjusting the focusing means to a position in which the variation resulting from the modulation of the focus is at a minimum so as to bring the radiation into focus on the memory element.

4,241,424

SEMICONDUCTOR DEVICES

John F. Dickson, Long Buckby, and Raymond E. Oakley, Westbury, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Sep. 27, 1978, Ser. No. 946,406
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—218 **4 Claims**



1. A method of operating a matrix array of field effect memory transistors, each transistor being formed on a substrate and including a source electrode, a drain electrode and a gate electrode, the method including the steps of:

writing each transistor into a first state;

punch through erasing selected transistors into a second state by establishing the source and drain electrodes of the selected transistors on the one hand at a predetermined potential with respect to the potential level of the gate electrode and substrate on the other; and

simultaneously inhibiting said punch through erasing of at least one of the remaining transistors by maintaining the gate electrode of each said at least one of the remaining transistors at a predetermined inhibiting potential;

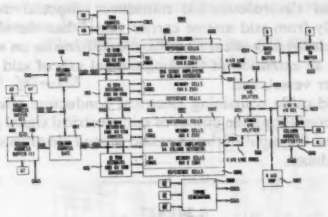
whereby to provide a required data pattern.

4,241,425

ORGANIZATION FOR DYNAMIC RANDOM ACCESS MEMORY

Ronald P. Cenker, Coplay; Donald G. Clemons, Walnutport; William R. Huber, III, and Frank J. Procyk, both of Center Valley, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,839
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **5 Claims**



1. A semiconductor memory device comprising a multiplicity of memory cells arranged in an ordered array of rows and columns, each row having an associated row conductor coupled to all cells in the row, each column having an associated column conductor coupled to all cells in the column, the array being divided into a plurality of sub-arrays; each sub-array having associated row decoder means and column decoder means; means for receiving an address; means for applying during an operating cycle a first part of the address to the row decoder means associated with each sub-array for selecting a corresponding row in each sub-array; a plurality of sense/refresh amplifier means, a different one coupled to each column conductor in each sub-array for sensing and for refreshing the contents of each cell situated along a selected row in each sub-array;

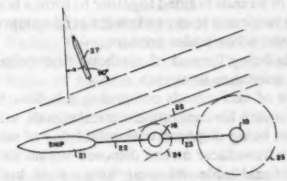
characterized in that there are included means responsive to a second part of the address for selecting during the operating cycle a sub-array for cell selection therein and for activating only the column decoder means associated with the selected sub-array.

4,241,426

FALSE PHASE FRONT ACOUSTIC DECOY

William E. Wells, Sr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1964, Ser. No. 344,508
Int. Cl.³ H04K *3/00*
U.S. Cl. 367—1 **3 Claims**



1. An acoustical decoy system for protecting a marine carrier vessel from an attacking torpedo, comprising in combination:

a marine carrier vessel to be protected, having a longitudinal axis substantially paralleling the direction of travel thereof;

an electrical signal generator disposed in said marine carrier vessel;

a phase shifter disposed in said marine carrier vessel and electrically connected to the output of said electrical signal generator;

a first electroacoustical transducer disposed remotely from said marine carrier vessel on substantially an extension of the longitudinal axis thereof;

a first cable containing electrical conductors effectively interconnecting the output of said phase shifter and the input of said first electroacoustical transducer;

a second electroacoustical transducer disposed more remotely from said marine carrier vessel than the aforesaid first electroacoustical transducer and likewise on substantially an extension of the longitudinal axis of said marine carrier vessel; and

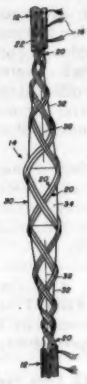
a second cable containing electrical conductors effectively interconnecting the output of said electrical signal generator and the input of the aforesaid second electroacoustical transducer.

4,241,427

CONDITION RESPONSIVE CABLE WITH BENDABLE COAXIAL SENSOR MOUNT

Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,542
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—20 **11 Claims**



1. A flexible, condition responsive cable device comprising in combination:

a plurality of strands braided together to form a hollow cable having a tendency to expand under axial compression and to constrict when under tension;

said strands being formed of synthetic fibers characterized by high resistance to stretch;

at lease one of said strands comprising a hollow braid;

conductor means for carrying electrical signals, said conductor means being disposed within said one of said strands;

an elongate transducer mount disposed within an expanded portion of said cable and comprising a rigid, hollow transducer housing and a pair of resiliently flexible, tapered fairings extending from opposite ends of said housing;

said housing having a central bore and said tapered fairings each having a central passage communicating with said bore;

transducer means, disposed in said bore and comprising terminal means;

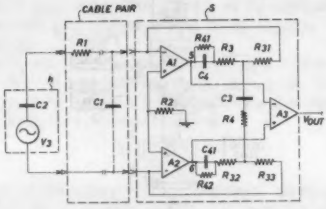
said conductor means leading from within said one strand through said fairing and connected to said terminal means.

4,241,428

LINE COMPENSATED SEISMIC AMPLIFIER

Albert J. Berni, Houston, Tex., and John F. Parrish, New Orleans, La., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 19, 1979, Ser. No. 4,638
Int. Cl.³ G01V *1/28*; H04B *3/28*; G01V *1/38*
U.S. Cl. 367—21 **23 Claims**



2. A marine seismic surveying system, wherein a transducer responsive to varying acoustic pressure produces a corresponding varying electrical output which is electrically coupled to a cable pair to conduct electric signals to a processing station, comprising a seismic amplifier coupled to said cable pair, which comprises:

a feedback compensation amplifier stage having at least a positive input pair and a negative input pair and at least two outputs;

a feedback circuit connecting said outputs to said negative input pair of said feedback compensation amplifier stage, said feedback circuit having an impedance combination which is an electrical equivalent of the combined impedance of said cable pair and said transducer;

means connecting said cable pair to said negative input pair;

means connected to said positive input pair for maintaining said positive input pair at the same potential;

a differential voltage amplifier stage having positive and negative polarity inputs and a final output; and

means electrically connecting at least two outputs from said feedback compensation amplifier stage to said positive and negative polarity inputs of said differential voltage amplifier stage.

4,241,429

VELOCITY DETERMINATION AND STACKING PROCESS FROM SEISMIC EXPLORATION OF THREE DIMENSIONAL REFLECTION GEOMETRY

Marvin G. Bloomquist, Arlington, and Yung-liang Wang, Irving, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,087
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—52 **8 Claims**

1. The method of producing a stacked seismic section in seismic exploration comprising:

generating linear, multiple fold, common depth point sets of seismograms with three dimensional reflection geometry, the reflections of seismic energy appearing across each set with time differences which are substantially on a hyperbola,

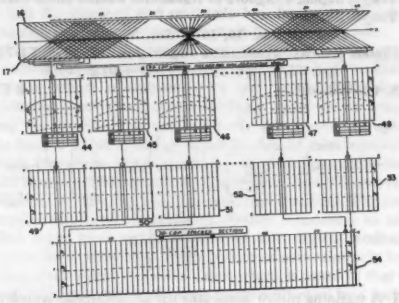
normal move-out correcting said sets with trace spacings determined by the source receiver-coordinate distance along the lines of exploration and with given values of searching velocity and travel time,

detecting the power of the seismic signal in the normal move-out corrected sets,

determining from the maximum detected signal the hyperbola velocity and the offset of the apex of said hyperbola from the point of minimum source-receiver separation,

from said hyperbola velocity and apex offset, determining the dip and strike of the subsurface interface producing

reflections in said seismograms and the average velocity of the path of said seismic energy to said subsurface interface, and



correcting said seismograms to zero source receiver time with time corrections determined from said average velocity, dip and strike, and

stacking the corrected seismograms to produce a three-dimensional common depth point stacked seismic section.

4,241,430

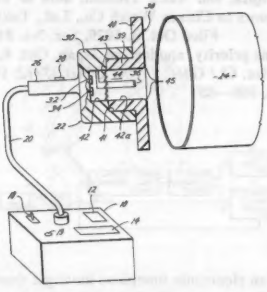
METHOD AND APPARATUS FOR DETERMINING THE LENGTH OF TUBULAR MEMBERS

Douglas J. Kayem, 711 Crossroads, Houston, Tex. 77079, and Harold L. Reed, Richmond, Tex., assignors to Douglas J. Kayem, Houston, Tex.

Filed Jan. 8, 1979, Ser. No. 1,828

Int. Cl.³ G01S *15/10*

U.S. Cl. 367—115 **13 Claims**



1. An improved method of determining the length of an elongated tubular member from a selected end of such tubular member, including the steps of:

providing in fluid communication with the air inside the tubular member sound producing means, sound detecting means, and means for sensing the ambient temperature of the air;

sensing the ambient temperature of the air with the temperature sensing means;

causing the sound producing means to generate a sound pulse at a selected instant of time;

detecting with the sound detection means the portion of the sound pulse that traverses the length of the tubular member and is reflected by the impedance differential surface set up by the opposite end of the tubular member and returns; and

determining the length of the tubular member responsive to the time of travel of the sound pulse, responsive to the difference, if any, in the time of travel of the sound pulse caused by the impedance differential surface being spaced from the opposite end of the tubular member, and responsive to the ambient temperature of the air through which the sound pulse travels.

4,241,431

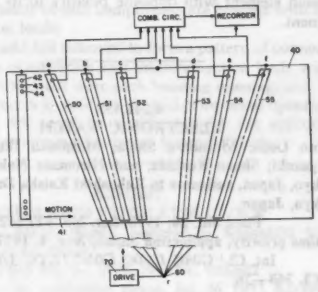
SONAR RANGING SYSTEM

Charles H. Jones, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1967, Ser. No. 678,488

Int. Cl.³ G01S *3/80*

U.S. Cl. 367—123 **9 Claims**



1. In a sonar scanning system wherein a vertical array of equally spaced transducers is employed as the detecting means, the combination of

means for processing the acoustic signals detected by said array to impart to said array a receiving pattern which contains a plurality of directional receiving beams orientated at different angles with respect to the horizontal,

the number of these beams and their angular orientation changing with time so that there is a beam available for detecting each of the major wave fronts arriving at said array from sound producing objects at progressively greater distances from said array; and

means for combining the signals developed by these beams to produce a range signal whose amplitude at any one time is indicative of the probability of a sound producing object being at a specific distance from said array.

4,241,432

TRANSDUCER-REFLECTOR SYSTEM

Lewie M. Barber; Bernie R. Criswell; Ruell F. Solberg, Jr., and Benjamin F. L. Weiss, all of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1967, Ser. No. 635,950

Int. Cl.³ H04R *17/00, 1/34*

U.S. Cl. 367—151 **3 Claims**

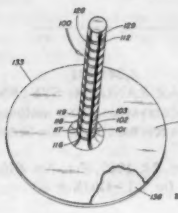
1. A line array acoustical transducer reflector system having a conical shell radiation pattern comprising,

a plurality of transducer elements vertically stacked and electrical-mechanically insulated from each other,

a disc-shaped metal reflector plate covered with a layer of pressure release material, said elements joined at one end to the center of said plate, and

a plurality of transformers for shading said elements individually contained in ferrite cup cores and having a primary winding and a plurality of output windings, each of said

transformers connecting several transducer elements to an electrical source and said output windings connecting



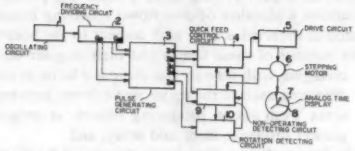
each element with opposite polarity to its adjacent element.

4,241,433

ELECTRONIC WATCH

Makoto Ueda; Masaharu Shida; Masataka Ikenishi; Joichi Miyazaki; Shozo Kushida, and Hiromasa Nakanishi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,362
Claims priority, application Japan, Aug. 4, 1977, 52-93669
Int. Cl.[3] G04B *19/00;* **G04C** *19/00, 3/00*
U.S. Cl. 368—76 **6 Claims**



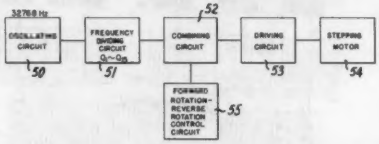
1. In an electronic watch having an oscillation circuit for producing a time base signal with a predetermined frequency, a frequency dividing circuit having a plurality of frequency dividing stages for dividing down the time base signal, a pulse generating circuit receptive of the outputs of the dividing stages of said frequency dividing circuit for producing standard pulses and quick feed pulses having a period shorter than that of said standard pulses, a stepping motor for moving a time hand to display time, and a drive circuit receptive of the standard pulses for driving said stepping motor, the improvement comprising: a non-operation detecting circuit for detecting a non-operative condition of said stepping motor and for producing a non-operation signal each time the stepping motor fails to operate in response to one standard pulse; counting means for counting the number of said non-operation signals; a rotation detecting circuit for detecting the resumption of operation of said stepping motor from the non-operative condition in response to a standard pulse; and a quick feed control circuit for quickly advancing said stepping motor in response to an output from the rotation detecting circuit by thereafter supplying to said drive circuit, in place of a standard pulse, a set of quick feed pulses equal in number to the number of non-operation signals counted in said counting means.

4,241,434

STEPPING MOTOR MECHANISM FOR AN ELECTRONIC WATCH

Masaharu Shida; Akira Torisawa, and Makoto Ueda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,179
Claims priority, application Japan, Jun. 17, 1977, 52-72572
Int. Cl.[3] G04C *19/00, 3/00;* **H02K** *29/00*
U.S. Cl. 368—85 **8 Claims**



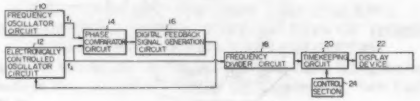
1. A stepping motor apparatus for an electronic watch of the type having a rotor rotated in the forward direction by alternating pulses, said stepping motor apparatus comprising: a generating circuit for generating at least three alternating pulses including a first pulse having a pulse width of 1.5 to 2.5 msec, a second pulse having a pulse width about twice as long as said first pulse width and a third pulse having a pulse width more than three times as long as said first pulse width; and means including a forward rotation-reverse rotation control circuit for controlling the application of the at least three alternating pulses to effect rotation of said rotor in the reverse direction such that said first pulse rotates said rotor in the forward direction, and said second and third pulses are applied at the time of angular movement of said rotor to cause said rotor to rotate in the reverse direction.

4,241,435

ELECTRONIC TIMEPIECE OSCILLATOR CIRCUIT

Hiro Fujita, and Akira Tsuzuki, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,588
Claims priority, application Japan, Oct. 6, 1978, 53-123233
Int. Cl.[3] G04C *19/00;* **G04B** *17/12;* **H03B** *27/00*
U.S. Cl. 368—85 **9 Claims**



1. In an electronic timepiece having a timebase signal source for producing a standard timebase signal, a frequency divider responsive to said timebase signal for producing a unit time signal, timekeeping circuit means responsive to said unit time signal for producing time information and display means for displaying said time information, the improvement whereby said timebase signal source comprises:

a high frequency oscillator circuit for producing a relatively high frequency signal, the frequency of said relatively high frequency signal being stable to a substantially high degree;

an electronically controlled oscillator circuit for producing a relatively low frequency signal serving as said timebase signal;

a phase comparator circuit for comparing the phase of said relatively high frequency signal with that of said relatively low frequency signal and for producing a phase comparison signal indicative of a phase relationship between said relatively high and low frequency signals;

a feedback signal generation circuit responsive to said phase

comparison signal for producing a digital feedback signal, said digital feedback signal being at a first logic level potential while the phase of said relatively low frequency signal is leading the phase of said relatively high frequency signal and being at a second logic level potential while the phase of said relatively low frequency signal is lagging that of said relatively high frequency signal;

said digital feedback signal being applied as a frequency control signal to said electronically controlled oscillator circuit which is responsive to said second logic level potential state of said digital feedback signal for determining the frequency of said relatively low frequency signal to have a value which is equal to that of said relatively high frequency signal multiplied by a factor comprising the sum of a predetermined integer and a first positive real number with value less than one, said electronically controlled oscillator circuit being further responsive to said first logic level potential state of said digital feedback signal for determining the frequency of said relatively low frequency signal to have a value which is equal to that of said relatively high frequency signal multiplied by a factor comprising the difference between said predetermined integer and a second positive real number with value less than one.

4,241,436

METHOD OF MANUFACTURING OF ELECTRONIC MODULES FOR TIMEPIECES AND ELECTRONIC MODULE OBTAINED BY CARRYING OUT THIS METHOD

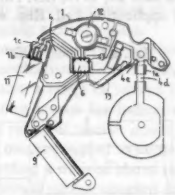
Jean Boizt, Neuchâtel; Philippe Clot; Philippe Golay, both of Fontainemelon, and Daniel Paratte, Neuchâtel, all of Switzerland, assignors to Fabrique d'Horlogerie de Fontainemelon S.A., Neuchâtel, Switzerland

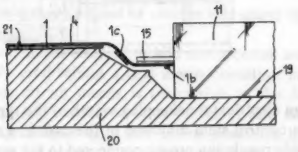
Filed Dec. 13, 1978, Ser. No. 969,059

Claims priority, application Switzerland, Dec. 14, 1977, 15376/77

Int. Cl.[1] G04C *23/02*; H05K *3/32*

U.S. Cl. 368—88 **10 Claims**





1. A method of manufacturing a module for an electronic timepiece, comprising:

providing a substrate in the form of an electrically insulating flexible film having a pattern of connection foil leads thereon and a pattern of openings therethrough, with said lead pattern being designed to electrically interconnect components of a module and said opening pattern comprising a first set of component openings conveniently located, sized and shaped for receiving said components and a second set of bonding openings facing locations where said foil leads are to be connected with terminal leads of said components;

locating said components within said component openings so that said foil leads are registered with appropriate component terminal leads; and

bonding said foil leads with said terminal leads by bringing a bonding tool into engagement with said foil leads through said bonding openings.

8. An electronic watch module comprising:

an electrically insulating flexible film having a metallic foil secured thereto;

a plurality of components located in a set of component openings in said film located, sized and shaped for receiving said module components;

a set of bonding openings in said film facing locations where terminal leads of said components are bonded with interconnection leads;

portions of said foil removed to form a pattern of connection foil leads constituting said interconnection leads with at least a portion left over each bonding opening; and

said components located within said component openings so that said foil leads are registered with the appropriate component terminal leads and bonded thereto.

4,241,437

SIMULATED PENDULUM CLOCK

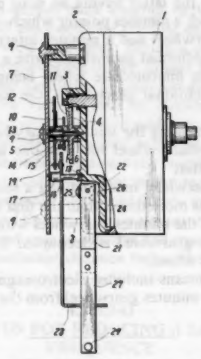
Itaru Ashida, Tokyo, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,632

Claims priority, application Japan, Jul. 26, 1977, 52/89580

Int. Cl.[3] G04B *15/00*; G04F *5/00*

U.S. Cl. 368—134 **3 Claims**



1. In a simulated pendulum clock of the type having a timepiece movement for driving the hands of the clock: a transmission wheel rotationally driven during use of the clock; a rotating member mounted for rotation; means for transmitting rotational movement of said transmission wheel to said rotating member whenever the load on said rotating member is less than a predetermined value and otherwise enabling movement of said transmission wheel relative to said rotating member; an escape wheel having a set of teeth about its periphery and mounted coaxially with and adjacent to said rotating member to undergo rotational movement; spring means coacting with said rotating member for applying a rotating torque to said escape wheel tending to rotate said escape wheel, said spring means comprising a coil spring having one end connected to said rotating member and the other end connected to said escape wheel; a rockable pallet mounted for rocking movement and having a pair of pallet pins alternately engageable and disengageable with the teeth of said escape wheel during

rotation thereof to effect rocking movement of said pallet; and a pendulum fixedly secured at its upper end and hanging downwardly therefrom in juxtaposition with said pallet and connected to the lower end of said pallet to transmit the rocking movement of the pallet into a rocking to-and-fro movement of said pendulum.

4,241,438

DEVICE FOR ADJUSTMENT OF ELECTRICAL CLOCKS

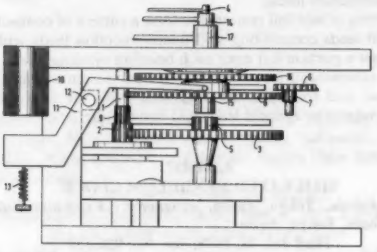
Eckhard Kern, Hofheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,309

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827918

Int. Cl.³ G04B *27/08*

U.S. Cl. 368—185 **7 Claims**



1. In a device for adjustment of an electrical clock with a clockwork train, the latter having an hour pointer driven via an hour gearwheel, a minutes pointer which is driven by means of a minutes gearwheel and a minutes intermediate wheel, as well as having additional gearwheels with a first transmission ratio, the minutes intermediate wheel being coupled with a motor via the additional gearwheels, the improvement comprising

means for decoupling the minutes gearwheel from the minutes intermediate wheel for a coarse adjustment of the minutes pointer,

at least one gearwheel means having a second transmission ratio which is more direct than the first transmission ratio for coupling the minutes gearwheel with the motor when said minutes gearwheel is decoupled from said minutes intermediate wheel,

said coupling means includes electromagnet means for decoupling the minutes gearwheel from the minutes intermediate wheel.

4,241,439

SUBSTRATE BOARD/CARRIER FRAME ASSEMBLY

Jean P. Skwarek, Besancon, France, assignor to Timex Corporation, Waterbury, Conn.

Filed Jan. 4, 1980, Ser. No. 109,735

Int. Cl.³ G04B *1/00*; G04C *3/00*; G04B *37/00*

U.S. Cl. 368—204 **13 Claims**

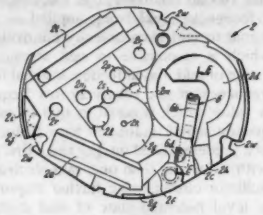
1. An assembly for an electronic timepiece powered by a battery comprising:

(a) a carrier frame having a first passage extending therethrough,

(b) a substrate board having one side juxtaposed against the carrier frame and one free side, said board having a second passage extending therethrough from one side to the other aligned with said first passage through the carrier frame and also having a circuit component on the free side thereof,

(c) an elongated battery spring contact affixed to the carrier frame and adapted to contact the battery at one end and extend through the aligned first and second passages through said frame and board, terminating beyond the free side of said board in a contact post, and

(d) a bead of conductive material deposited around the contact post, connecting said post to said circuit component on the free side of the substrate board,



whereby said conductive bead not only completes the electrical circuitry between the spring contact and circuit component but also functions as a retaining head to hold the substrate board against the carrier frame.

4,241,440

BATTERY-CONTAINING CROWN FOR WRISTWATCHES

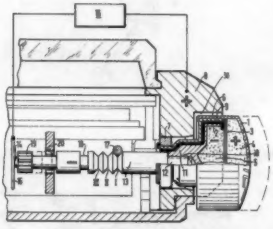
Josef King, Schramberg, Fed. Rep. of Germany, assignor to Gebrüder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,211

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808217

Int. Cl.³ G04B *1/00*

U.S. Cl. 368—204 **11 Claims**

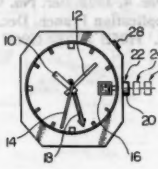


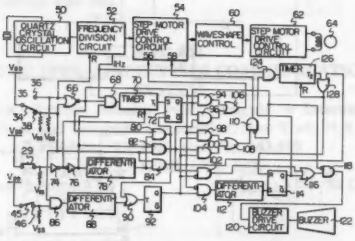
1. In an electrical timekeeping watch of the type including a casing, a control stem mounted in the casing, a manually manipulatable regulating crown connected to the stem for actuating the latter, an electronic circuit and a voltage source for the circuit, which is disposed outside of said casing, the improvement wherein said voltage source is contained within said crown, said crown including electrical conductor means in sliding electrical contact with a component of said circuit when said crown is manipulated, said crown is threadedly connected to said stem, means on said casing for engaging said stem in a selected axial position of the latter to constrain said shaft against rotation, allowing said crown to be unthreaded from said stem while said stem remains in said casing.

4,241,441
ELECTRONIC TIMEPIECE

Mitsuhiro Murata, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,253
Claims priority, application Japan, Mar. 23, 1978, 53-033470
Int. Cl.[3] G04B 23/08; G04C 21/16; G04B 21/00; G04C 23/18
U.S. Cl. 368—247 9 Claims



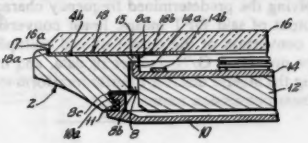


1. An electronic timepiece, comprising:
a source of a standard time signal;
motor drive circuit means responsive to said standard time signal for producing a drive signal;
a motor coupled to receive said drive signal;
a time indicating mechanism driven by said motor to display current time within a range of twelve hours;
alarm time indicating means for indicating a preset alarm time within said range of twelve hours;
alarm time setting means coupled to said alarm time indicating means for setting a desired alarm time;
alarm detection switch means coupled to said alarm time indicating means and to said time indicating mechanism for detecting coincidence between said alarm time and said current time, and responsive to said detection for producing an alarm detection signal;
alarm circuit means coupled to receive said alarm detection signal;
alarm control means coupled to said alarm circuit means for selectively establishing a first alarm condition in which said alarm circuit means is responsive to the first and subsequent odd-numbered occurrences of said alarm detection signal after said first alarm condition has been established, for generating an alarm actuation signal, and a second alarm condition in which said alarm circuit means is responsive to the second and subsequent even-numbered occurrences of said alarm detection signal after said second alarm condition has been established, for generating said alarm actuation signal;
an alarm device responsive to said alarm actuation signal for generating an audible alarm warning signal; and
discrimination means for enabling said first alarm condition and said second alarm condition to be distinguished by the user.

4,241,442
TIMEPIECE WITH SHAPED COMPONENTS

Raymond J. Grohoski, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 2, 1979, Ser. No. 63,274
Int. Cl.[3] G04B 37/00
U.S. Cl. 368—294 11 Claims

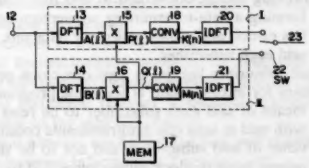


1. In a timepiece with a minute hand and an hour hand, the combination of:
(a) a case having a non-circular recess in one side intersecting with a cylindrical bore extending into said case, said bore including a first bore section adjacent to and intersecting said non-circular recess to form a first annular shoulder in said case at the bottom of the recess with said first shoulder having a non-circular outer periphery and a circular inner periphery defining a circular opening in the bottom of the recess and further including a second bore section of larger diameter below and intersecting said first bore section to form a second annular shoulder of circular outer and inner periphery recessed in said case below and hidden from view by said first shoulder;
(b) a transparent crystal with a non-circular outer periphery adapted to fit in said non-circular recess to close off said recess, said crystal having a bottom surface facing the bottom of said recess;
(c) a decorative annular mask attached to the bottom surface of said crystal and overlying the first annular shoulder to hide it from view, said mask having a non-circular outer periphery corresponding to that of said recess and having a circular inner periphery of such size to provide a circular window for viewing into the circular opening in the bottom of said recess and into said bore; and
(d) a circular dial plate supported in the second bore section, said dial plate including a central, circular surface visible through the circular window in the mask for indicating time in cooperation with said hands and an up-turned, circumferential lip which abuts against the second annular shoulder in said case to position and space the central dial surface a preselected distance below the masked crystal.

4,241,443
APPARATUS FOR REDUCING A SAMPLING FREQUENCY

Hiroshi Sakaki, and Sotokichi Shintani, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,824
Claims priority, application Japan, Apr. 12, 1978, 53-42192
Int. Cl.[3] H04J 1/05
U.S. Cl. 370—70 2 Claims



1. An apparatus for reducing a sampling frequency which derives information with a bandwidth up to f_B/N having the

sampling frequency $2f_{B/N}$, *(N is an integer), from an input signal with a bandwidth up to* f_B having the sampling frequency $2f_B$, comprising; a pair of partial frequency reduction systems and a switch for alternately selecting the outputs of said partial frequency reduction systems to provide the output signal, each of said partial frequency reduction systems having DFT means for performing on G points the discrete Fourier transform (G is a multiple of N) of said input signal, a multiplication means for multiplying the predetermined frequency characteristics with the output of said DFT means, linear conversion means for linear conversion of the output of said multiplication means and for providing G/N number of data, and means for performing the inverse discrete Fourier transform to the output of said linear conversion means.

4,241,444

ARRANGEMENT FOR TIME-DIVISION MULTIPLEX PWM DATA TRANSMISSION

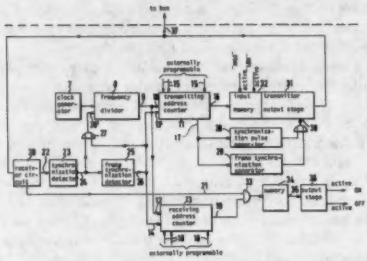
Horst Kister, Wehrheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,443

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750818

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—85 **14 Claims**



1. In an arrangement for time-division multiplex data transmission having a data bus system which comprises a data bus circuit, several subscribers which are connected to the data bus circuit and have a transmitter part and a receiver part and communicate with one another by data transmission in a predetermined sequence in a given combination, and at least one clock generator, in which the sequence of all the given combinations of the subscribers runs through during a time frame and a time slot within the time frame is available for connecting each combination, the improvement wherein

each subscriber includes at least one programmable counter means for emitting a control signal when a programmed number has been reached and for resetting itself to zero when a given counting capacity which is the same for all said counter means has been reached, said at least one programmable counter means has a counter input connected to the clock generator and has a first control output,

switching means, connected to said first control output, for forming a data-transmitting connection between the data bus circuit and a data source or data sink respectively of said each subscriber,

each subscriber has the at least one clock generator, and

means for enabling said at least one programmable counter means of said each subscriber to be reset synchronously with said at least one programmable counter means of the other of said subscribers and not to be subjected at said output input to clock pulses generated by the at least one clock generator until the at least one programmable counter means of a slowest of said subscribers has been reset, which determines the end of the time frame, whereby said at least one programmable counter means of all said subscribers are synchronized with one another.

4,241,445

METHOD AND APPARATUS FOR COUNTING TRANSMISSION ERRORS IN A DIGITAL MICROWAVE LINK

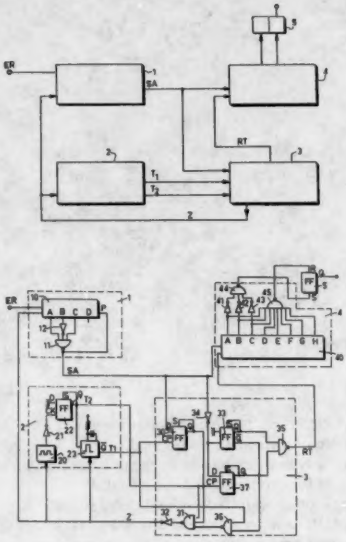
Georges A. Payen, Montrouge, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Dec. 4, 1978, Ser. No. 965,866

Claims priority, application France, Dec. 5, 1977, 77 36604

Int. Cl.³ H04B *17/00*; G06F *11/00*

U.S. Cl. 371—5 **3 Claims**



1. A method of counting transmission errors in a digital microwave link for producing a demand of commutation onto an emergency channel when the quality of the link becomes deficient, wherein the errors are counted during a period t which is always at least equal to a value t_1 and at most equal to a value t_2, and which period terminates when a fixed number N of errors has been detected, a pulse is stored upon each detection of N errors within a period t, and a demand of commutation is produced when n_1 pulses have been stored consecutively.

4,241,446

APPARATUS FOR PERFORMING SINGLE ERROR CORRECTION AND DOUBLE ERROR DETECTION

Leonard G. Trubisky, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 16, 1978, Ser. No. 952,025

Int. Cl.² G06F *11/12*; G11C *29/00*

U.S. Cl. 371—37 **5 Claims**

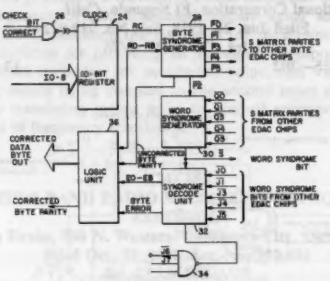
1. An apparatus for performing error correction and detection of binary words, said apparatus having a plurality of sections, each section processing one byte of data and comprising:

first means for receiving raw data;

second means coupled to said first means for producing a first plurality of intermediate sector matrix parity outputs;

third means coupled to said second means for receiving one of said first plurality of outputs and a second plurality of

intermediate matrix parity outputs from other sections and generating therefrom a syndrome signal; and



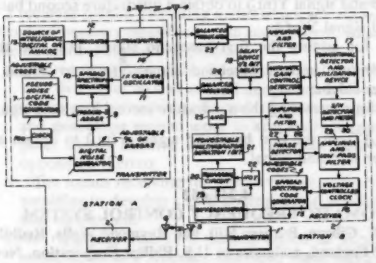
fourth means coupled to said first and third means for receiving said syndrome signal and a plurality of syndrome signals from other sections and generating therefrom the corrected data bits.

4,241,447

SECURE SPREAD SPECTRUM COMMUNICATION SYSTEM

Marvin A. Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 22, 1969, Ser. No. 843,689
Int. Cl.³ H04K *1/00, 3/00*
U.S. Cl. 375—1 **10 Claims**



1. Secure communication apparatus comprising:

a first source of a given pseudo-noise digital code;

first means coupled to said source to corrupt said given digital code by a predetermined percent of and distribution of errors;

second means coupled to said first means to generate a spread spectrum signal in response to said corrupted given digital code;

a second source of intelligence; and

third means coupled to said second source and said second means to transmit said spread spectrum signal modulated by said intelligence.

4,241,448

HIGH SENSITIVITY DUAL FUNCTION METER CIRCUIT

Peter A. Kwitkowski, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

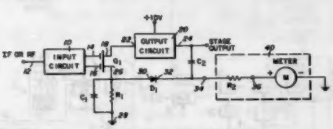
Filed Dec. 28, 1979, Ser. No. 107,985
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—115 **5 Claims**

1. A dual function high sensitivity meter circuit simultaneously responsive to both an AC signal component of an AC signal being processed by a preselected stage of an associated electronic circuit, and a component of a DC bias voltage from the bias network of the preselected stage, comprising:

(a) means for rectifying an AC signal, having a first electrode and a second electrode;

(b) means for coupling a DC bias voltage component from the bias network of the preselected stage to the first electrode of the means for rectifying;

(c) means for AC grounding the first electrode of the rectifying means;



(d) means for AC coupling a component of an AC signal being processed by the preselected stage to the second electrode of the rectifying means;

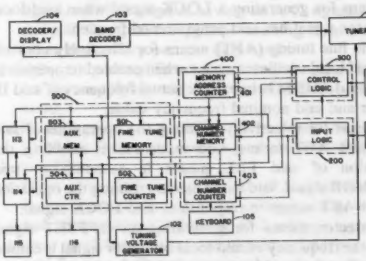
whereby the DC bias voltage component is coupled through the rectifying means to the second electrode, and the AC signal component is rectified and superimposed on the DC bias voltage component to comprise a meter driving signal.

4,241,449

MEMORY SAVING ALL-CHANNEL DIGITAL TELEVISION RECEIVER

Akio Tanaka, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 7, 1977, Ser. No. 840,341
Int. Cl.³ H04N *1/26*
U.S. Cl. 455—186 **13 Claims**



9. The method of operating a television receiver tuneable to any channel by its channel number and including a limited-location memory for storing channel numbers, channel tuning voltages and channel number-related additional receiver adjustment information comprising:

tuning said receiver to a selected channel;

scanning said limited-location memory to determine the presence of the selected channel number, channel tuning voltage and additional receiver adjustment information corresponding to the selected channel;

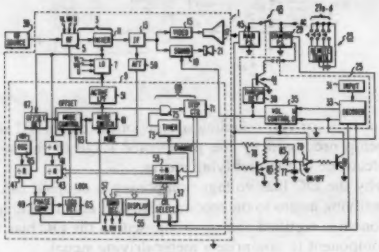
reading out said channel tuning voltage and said additional receiver adjustment information, if present; and

producing appropriate signals for said receiver based upon said channel tuning voltage and said additional receiver adjustment information.

4,241,450
AUTOMATIC TURN-OFF APPARATUS FOR A RADIO OR TELEVISION RECEIVER

Harold Blatter, and Juri Tults, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,021
Int. Cl.³ H04B 1/16
U.S. Cl. 455—182 10 Claims



1. In a receiver, apparatus comprising:

local oscillator means for generating a local oscillator signal having a frequency capable of being controlled;

mixer means for combining an RF carrier and said local oscillator signal to derive an IF signal having at least one carrier with a nominal frequency value;

phase locked loop (PLL) means for controlling said local oscillator means when enabled to operate to cause said local oscillator signal to have a programmed frequency substantially equal to the product of a programmable factor and the frequency of a frequency reference signal;

channel selection means for determining said programmable factor in accordance with selected channel and for generating a CHANGE signal when a new channel is selected;

lock means for generating a LOCK signal when said local oscillator signal has said programmed frequency;

automatic fine tuning (AFT) means for selectively controlling said local oscillator means when enabled to operate to reduce a deviation between the actual frequency of said IF carrier and said nominal frequency value;

mode means for selectively enabling the operations of said PLL and AFT means, said mode means enabling the operation of said PLL means in response to said CHANGE signal, said mode means enabling the operation of said AFT means in response to said LOCK signal;

offset detector means for generating an OFFSET signal when the frequency of said local oscillator signal is caused to be offset from said programmed frequency by a predetermined amount during the operation of said AFT means;

said mode means enabling the operation of said PLL in response to said OFFSET signal;

main power supply means for generating supply voltages for said receiver;

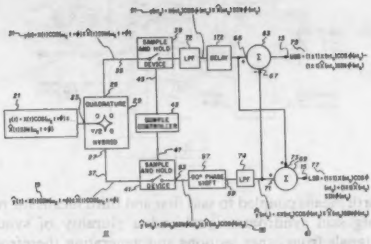
main power supply control means for selectively enabling said power supply means to generate said supply voltages and thereby selectively causing said receiver to be in an on or off condition; and

mode responsive means coupled to said power supply control means for causing said receiver to be in said off operating condition when said mode means causes the operations of said PLL and AFT means to be alternately enabled a predetermined number of times after the generation of said CHANGE signal.

4,241,451
SINGLE SIDEBAND SIGNAL DEMODULATOR

Richard C. Maixner, Dallas; Robert K. Marston, Plano, and Khalil E. Massad, Garland, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 26, 1978, Ser. No. 919,021
Int. Cl.³ H04B 1/26
U.S. Cl. 455—202 13 Claims



1. A demodulator for demodulating a received signal that can be represented by the equation $Y(t)=X(t)\cos(\omega_c t+\phi)\pm X(t)\sin(\omega_c t+\phi)$ where ω_c is the carrier frequency and ϕ is a constant phase shift, comprising:

means for converting the received signal y(t) into a first baseband signal $Y(nt_s)$ where n is an integer variable and t_s is a sampling period;

means for converting the received signal Y(t) into a second baseband signal $\hat{Y}(nt_s)$; where n is an integer variable and t_s is a sampling period;

means for performing a Hilbert's transform on the second baseband signal $\hat{Y}(nt_s)$ to obtain a quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$;

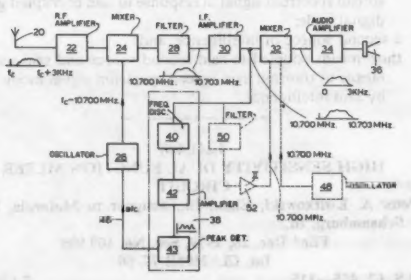
means for adding the first baseband signal $Y(nt_s)$ to the quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$ to obtain a lower sideband signal; and

means for subtracting the quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$ from the first baseband signal $Y(nt_s)$ to obtain an upper sideband signal.

4,241,452
AUTOMATIC FREQUENCY CONTROL SYSTEM

Rodney W. Gibson, Burgess Hill, and Raymond Wells, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1978, Ser. No. 960,531
Claims priority, application United Kingdom, Nov. 23, 1977, 48753/77
Int. Cl.³ H04B 1/26
U.S. Cl. 455—203 10 Claims



1. An automatic frequency control (afc) system comprising a signal frequency translation means, having a first input for an

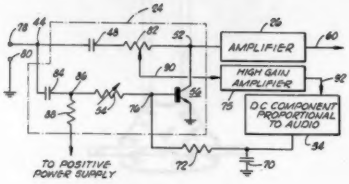
input signal including a pilot signal and a modulated signal, a second input for a control signal and an output providing a frequency translated input signal, and an afc circuit having first means for providing a waveform whose amplitude depends on the frequency of said translated output signal and second means for determining the minimum (or maximum) value of said waveform for providing an afc signal in response to the determined minimum (or maximum) value, said value determining means being coupled to the second input of the frequency translating means so as to control appropriately the amount of frequency translation.

4,241,453

CITIZENS BAND RADIO RECEIVER WITH SQUELCH CONTROL

Harlan Drake, 900 N. Western, Oklahoma City, Okla. 73106

Filed Oct. 19, 1978, Ser. No. 952,632
Int. Cl.³ H04B 1/18
U.S. Cl. 455—219 **6 Claims**



1. In combination with a radio receiver of the type adaptive for operation in an eight-track record tape deck and consisting of a receiver section providing audio frequency signal output, an audio frequency amplifier and an audio output, an automatic squelch control circuit comprising:

means receiving said audio frequency signal output to provide first input to said audio frequency amplifier;

amplifier means receiving said audio frequency signal output and generating second input to said audio frequency amplifer that is additive with said first input and in phase opposition thereto;

rectifier means receiving the output of said audio frequency amplifier to develop a D-C control signal proportional to said output; and

means applying said D-C control signal as input to said amplifier means, whereby excessive input signals to said audio frequency amplifier will proportionately reduce the amplifier means second input to said audio frequency amplifier to provide relatively greater amplitude for input thereto.

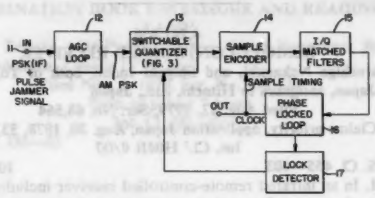
4,241,454

HARD LIMITING ACQUISITION TECHNIQUE FOR PSK CARRIER DETECTOR

James L. Snell, Palm Bay, and Raymond F. Cobb, Melbourne Beach, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 28, 1978, Ser. No. 882,068
Int. Cl.³ H04B 1/16; H03D 3/18
U.S. Cl. 455—260 **16 Claims**

1. In a frequency recovery system wherein an incoming signal, which contains a prescribed frequency to be recovered and may be subjected to a modulation so as to contain a sideband, the center frequency of which is separated from said prescribed frequency, is processed to obtain said prescribed frequency, said frequency recovery system including a synchronous detector for deriving said prescribed frequency, the improvement wherein said frequency recovery system includes means for preventing said system from acquiring said sideband center frequency as said prescribed frequency, said preventing means including means for controlling the amplitude of said incoming signal prior to being processed, to thereby prevent said synchronous detector from detecting said sideband center frequency, said amplitude controlling means



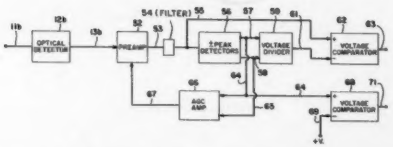
including means for controlling the amplitude of said incoming signal until said synchronous detector has recovered said prescribed frequency and thereafter removing the control of the amplitude of said incoming signal.

4,241,455

DATA RECEIVING AND PROCESSING CIRCUIT

Jules A. Eibner, Maple Glen, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,475
Int. Cl.³ H04N 9/00
U.S. Cl. 455—600 **5 Claims**



1. A circuit for processing weak light signals representative of digital data of the type having variable duty cycles comprising:

an optical light detector for detecting said digital data light signal, said light signals having an A.C. signal component and a D.C. signal component resulting from a duty cycle other than a fifty percent duty cycle,

a high-gain preamplifier coupled to said optical light detector for amplifying said A.C. and said D.C. signal components,

said high-grain preamplifier further providing a second amplified D.C. component signal introduced by said preamplifier,

a filter connected to the output of said preamplifier for removing both of said D.C. voltage component signals and for producing a floating A.C. voltage signal output,

a linear amplifier coupled to said preamplifier for amplifying said floating A.C. voltage signal,

a positive peak detector coupled to said amplified floating A.C. voltage signal for producing a substantially positive floating D.C. voltage representation of the positive peaks of said floating A.C. voltage signal,

a negative peak detector coupled to said amplified floating A.C. voltage signal for producing a substantially negative floating D.C. voltage representation of the negative peaks of said floating A.C. voltage signal,

a voltage divider having its two end terminals connected across the positive and the negative floating D.C. voltages which are representative of the peak outputs from said peak detectors,

said voltage divider having an intermediate voltage tap representative of a predetermined voltage on said voltage divider, and

a comparator having a first input connected to said interme-

diate voltage tap of said voltage divider and the other input connected to said floating amplified A.C. voltage signals for producing a voltage output signal representative of said original digital data.

4,241,456

REMOTE-CONTROLLED RECEIVER

Harushige Nakagaki, and Shigeki Inoue, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan

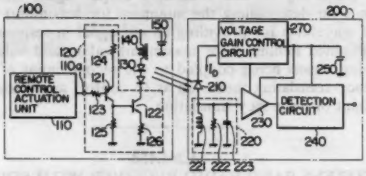
Filed Aug. 22, 1979, Ser. No. 68,564

Claims priority, application Japan, Aug. 30, 1978, 53/104928

Int. Cl.³ H04B 9/00

U.S. Cl. 455—603 **10 Claims**

1. In an infrared remote-controlled receiver including light detecting means for receiving a remote control signal transmitted by an infrared radiation to generate a light signal corresponding to the intensity of said received signal, and an amplifier for amplifying the output light signal of said light detecting means, the improvement comprising circuit means connected to said amplifier to detect an ambient luminance of said receiver and control the gain of said amplifier in response to said detected ambient luminance of said receiver.

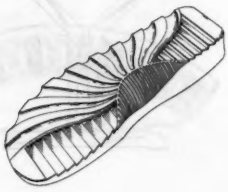


DESIGNS

DECEMBER 23, 1980

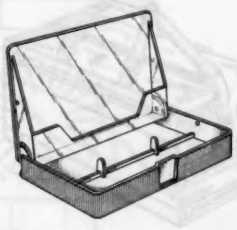
257,646
GERIATRIC RESTRAINT
Edwin H. Riedell, 621 Buckboard Ct., Brea, Calif. 92621
Filed May 22, 1978, Ser. No. 908,409
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

257,647
SOLE
Luc Combaret, Bellefeuille, Canada, assignor to Baron Rubber Limited, St.-Jerome, Canada
Filed May 30, 1978, Ser. No. 911,060
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

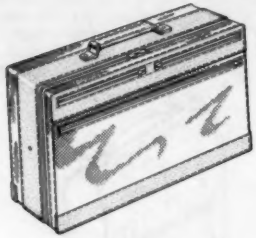


257,648
COMBINATION BOOK ENCLOSURE AND READING LAMP
Joel M. Tarrida, 1616 Pemberton Ave., North Vancouver, British Columbia, Canada (V7P 2S6)
Filed Nov. 9, 1978, Ser. No. 959,124
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

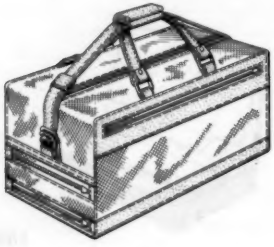
257,649
AUDIO CASSETTE ALBUM
Stepen G. Belgin, Campbell, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
Filed Jul. 27, 1978, Ser. No. 928,847
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



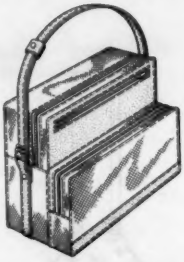
257,650
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 23, 1979, Ser. No. 23,366
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



257,651
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 28, 1979, Ser. No. 24,626
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

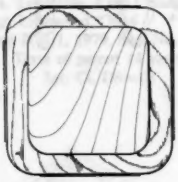


257,652
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 28, 1979, Ser. No. 24,627
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



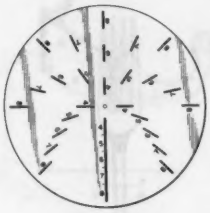
257,653
DINING TABLE
France Berlic, 37-31 73rd St., Jackson Heights, N.Y. 11372
Filed Jun. 13, 1978, Ser. No. 915,207
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

257,654
BOWL
Alfred Campana, Birmingham, Mich., and Martin J. Waterfield, Bal Harbor, Fla., assignors to Florists' Transworld Delivery Association, Southfield, Mich.
Filed Mar. 29, 1979, Ser. No. 25,264
Term of patent 14 years
Int. Cl. D07—*01;* D11—*02*
U.S. Cl. D7—1

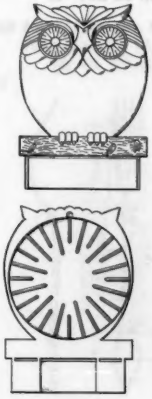


257,655
PLATE OR THE LIKE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 15, 1978, Ser. No. 961,010
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—36

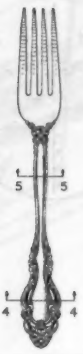
257,656
PIE AND PIZZA SERVING PORTION INDICATOR
Alice R. Walker, Rte. 1, Box 279B, Ocean City, Md. 21842
Filed Nov. 21, 1978, Ser. No. 962,809
Term of patent 14 years
Int. Cl. D19—*08;* D07—*04*
U.S. Cl. D7—43



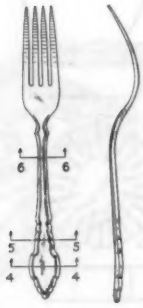
257,657
COMBINED COASTER AND CALENDAR
Roger L. Stoll, Pella, Iowa, assignor to Enduro Corporation, Pella, Iowa
Filed Jan. 5, 1979, Ser. No. 1,376
Term of patent 14 years
Int. Cl. D07—*06;* D19—*03*
U.S. Cl. D7—45



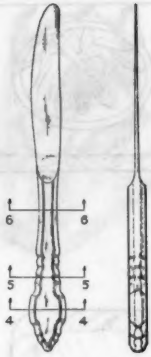
257,658
ARTICLE OF FLATWARE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed May 23, 1979, Ser. No. 41,724
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



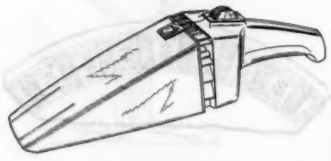
257,659
ARTICLE OF FLATWARE
Ronald A. Guodace, Yalesville, Conn., assignor to International Silver Company
Filed May 23, 1979, Ser. No. 41,729
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



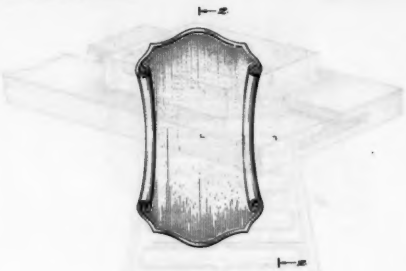
257,660
KNIFE
Ronald A. Guodace, Yalesville, Conn., assignor to International Silver Company, Meriden, Conn.
Filed May 24, 1979, Ser. No. 42,318
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



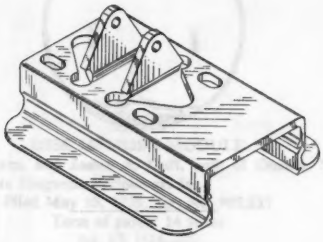
257,661
PORTABLE VACUUM CLEANER
Carroll M. Gantz, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Dec. 7, 1978, Ser. No. 967,361
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—164



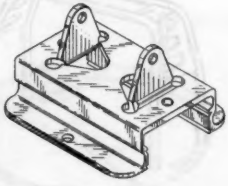
257,662
ESCUTCHEON
Jacqueline Brezney, Flemington, N.J., assignor to Unican Security Systems, Ltd., Montreal, Canada
Filed Aug. 17, 1978, Ser. No. 934,636
Term of patent 14 years
Int. Cl. D8—*09*; D11—*02*
U.S. Cl. D8—350



257,663
BRACKET DESIGN FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,323
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



257,664
BRACKET FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,324
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



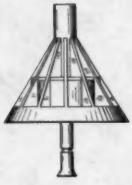
257,665
GAME HOLDER OR SIMILAR ARTICLE
Leroy Young, 969 Washington St., Franklinton, La. 70438
Filed May 30, 1978, Ser. No. 910,584
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367

257,666
DOUBLE CHANNEL ROLL BAR FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,322
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—376

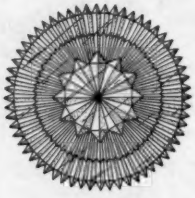
257,667
BOTTLE
Nobuyoshi Ito, Yamata, Japan, assignor to Suntory Limited, Osaka, Japan
Filed Jul. 5, 1978, Ser. No. 922,579
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—401

257,668
PAINT POT LINER
Paul B. Ahern, 32 Stevens Rd., Melrose, Mass. 02176
Filed Oct. 10, 1978, Ser. No. 949,613
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—429

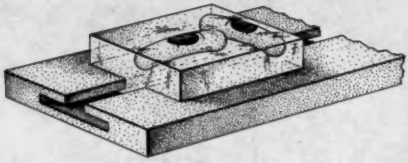
257,669
CAP FOR A SMOKE INHALATION DEVICE
Alexander B. Robertson, Austin, Tex., assignor to Oat Willie's Dept. Store, Inc., Austin, Tex.
Filed Aug. 25, 1977, Ser. No. 827,831
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—436



257,670
CLOCK
Ronald T. Lewis, 27725 166th Ave. SE., Kent, Wash. 98031
Filed Nov. 25, 1977, Ser. No. 854,986
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



257,671
ADJUSTABLE LEVEL
Clayton A. Elliott, 1931 Arbor La., Union, N.J. 07083
Filed Mar. 12, 1979, Ser. No. 19,707
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



257,672
SNOW DISC
Nevitt S. Beck, 260 Bonnett St. SW., North Canton, Ohio 44720
Filed Aug. 11, 1978, Ser. No. 933,126
Term of patent 7 years
Int. Cl. D12—*14*
U.S. Cl. D12—11

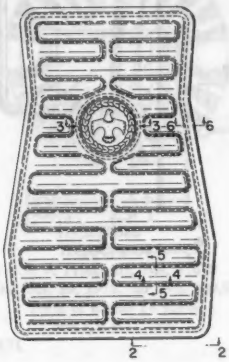
257,673
ROLL BAR
John L. Milton, 554 55th St., Delta, British Columbia, Canada (V4M 3J7)
Filed Oct. 2, 1978, Ser. No. 947,877
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

257,674

FRONT AUTO MAT

Dwight N. Wooters, LaGrange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.

Filed Nov. 15, 1978, Ser. No. 961,142
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203

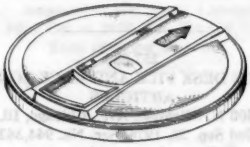


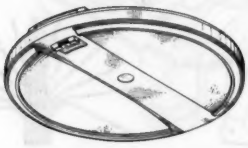
257,675

DISK MEMORY MODULE

Paul N. Green, and James A. Duff, both of Omaha, Nebr., assignors to Magnetic Peripherals Inc.

Filed May 15, 1978, Ser. No. 905,817
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—11



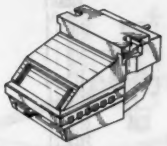


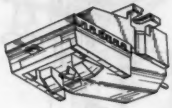
257,676

PHONOGRAPH CARTRIDGE

Joseph D. Kehl, Chicago, and Robert L. Deschamps, Wheaton, both of Ill., assignors to Shure Brothers, Inc.

Filed Jul. 31, 1978, Ser. No. 929,553
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—28



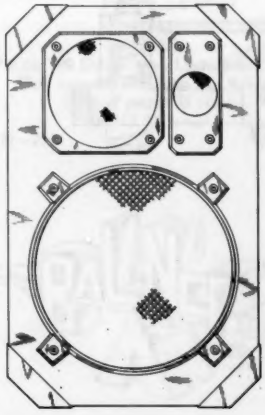


257,677

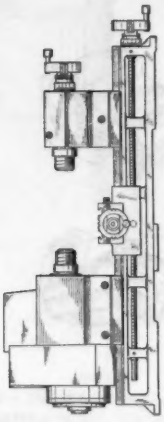
MOUNTING PLATE FOR AUTOMOBILE HI-FIDELITY SYSTEM SPEAKERS

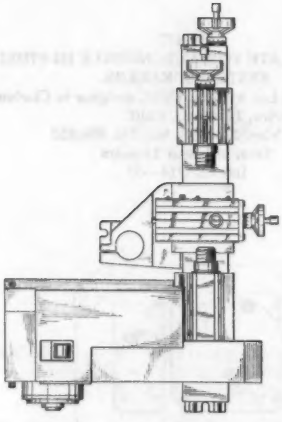
Makoto Fujiwara, Los Angeles, Calif., assignor to Clarion Corporation of America, Lawndale, Calif.

Filed Mar. 27, 1978, Ser. No. 890,853
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—37

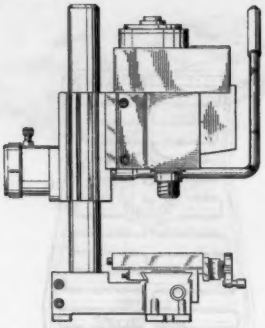


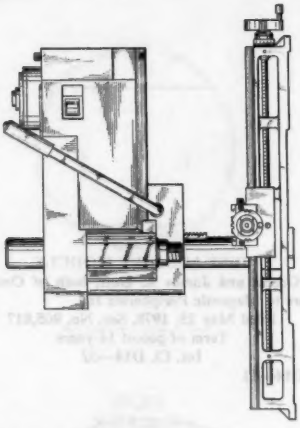
257,678
LATHE
John P. Cleary, Valley Cottage, N.Y., and Ralph A. Heineman, 1641 Third Ave., New York, N.Y. 10028, assignors to Ralph A. Heineman, New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,613
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



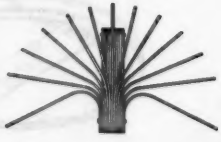


257,679
DRILL PRESS AND MOUNT THEREFOR
John P. Cleary, Valley Cottage, N.Y., and Ralph A. Heineman, 1641 Third Ave., New York, N.Y. 10028, assignors to Ralph A. Heineman, New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,612
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—132





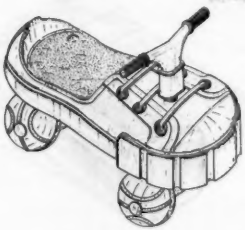
257,680
CONVERTIBLE DESK FILE AND RACK FOR PENDANT ARTICLES
John H. Bell, 500 N. Michigan Ave., Chicago, Ill. 60611
Filed Sep. 21, 1978, Ser. No. 944,342
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



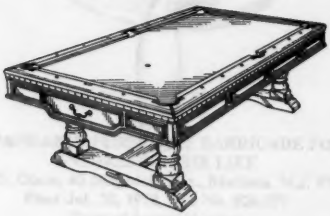
257,681
BACKGAMMON BOARD
Gwendolyn F. Grayson, 1440 Sierra Dr., Petaluma, Calif. 94952
Filed Jul. 17, 1978, Ser. No. 925,391
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—32

257,682
HOBO DOLL
Sue A. Beasley, R.R. 3, Princeton, Ind. 47670
Filed Oct. 10, 1978, Ser. No. 949,892
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171

257,683
SIMULATIVE TOY VEHICLE
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; George Kress, Scotch Plains, and Paul Means, Basking Ridge, both of N.J., assignors to Mel Appel, Livingston, N.J.
Filed Oct. 4, 1978, Ser. No. 948,638
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



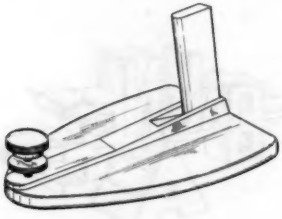
257,684
POOL TABLE
William D. Moore, High Point, N.C., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 6, 1978, Ser. No. 966,959
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232



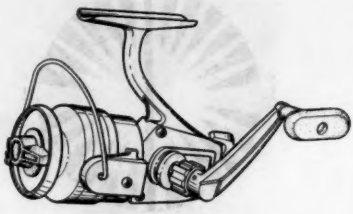
257,685
SEE-SAW
David A. Poulin, 789 Centre Ave., Lindenhurst, N.Y. 11757
Filed Aug. 21, 1978, Ser. No. 935,727
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—251

257,686
KNIFE HANDLE
Manuel C. Silva, Lemon Grove, Calif., assignor to Farreld Franklin Guiler, Ramona, Calif.
Filed May 14, 1979, Ser. No. 963,519
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—1

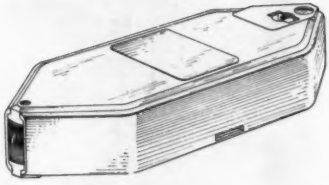
257,687
STAND FOR A MAGAZINE-FED PISTOL
Daniel L. Bechtel, 4701 Inwood Rd., Fort Worth, Tex. 76109
Filed Mar. 5, 1979, Ser. No. 17,498
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



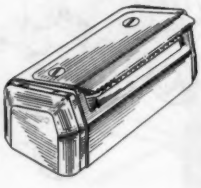
257,688
FISHING SPINNING REEL
Tetsuyuki Doi, and Takeshi Shohoji, both of Fukuyama, Japan, assignors to Ryobi Limited, Japan
Filed Jun. 23, 1978, Ser. No. 918,619
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



257,689
DIALYZER CARTRIDGE
Gerhard Riede, Vellinge, Sweden, assignor to Gambro, AG, Switzerland
Filed Aug. 28, 1978, Ser. No. 937,081
Claims priority, application Sweden, Mar. 22, 1978, 78799
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



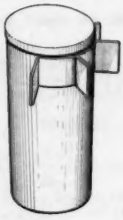
257,690
HAIR GROOMING ATTACHMENT
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Remington Products, Inc., Bridgeport, Conn.
Filed Feb. 1, 1979, Ser. No. 8,369
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—54



257,691
ANIMAL WATERER

Jerry D. Peterson, Conrad, and Gerald L. Knief, Grundy Center, both of Iowa, assignors to Ritchie Industries, Inc., Conrad, Iowa

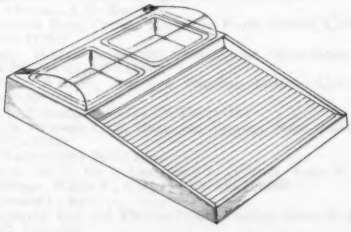
Filed Jan. 15, 1979, Ser. No. 3,428
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



257,692
PET FEEDER

Charles E. Thayer, 915 Pacific Ave., Suite 611, Tacoma, Wash. 98402

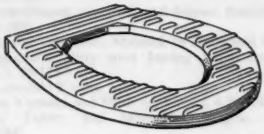
Filed Mar. 27, 1979, Ser. No. 24,266
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



257,693
HORSESHOE

William T. Poust, Sr.; William T. Poust, Jr., both of Hilltown Pike & Cremary Rd., P.O. Box 147, Hilltown, Pa. 18927, and Michael M. Poust, 825 Richhill Rd., Quakertown, Pa. 18951

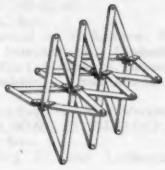
Filed Jun. 13, 1978, Ser. No. 915,169
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



257,694
EXPANDABLE FURNITURE BARRICADE FOR ANIMALS OR THE LIKE

Kenneth D. Olsen, 43 Ridgedale Ave., Madison, N.J. 07940

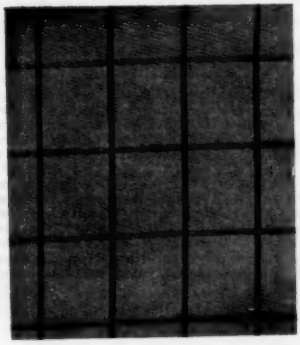
Filed Jul. 20, 1978, Ser. No. 926,377
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



257,695
TEXTILE FABRIC

Brian Kitson, 1, Fairholt St., London SW7, England

Filed Jun. 11, 1979, Ser. No. 46,365
Claims priority, application United Kingdom, Dec. 12, 1978, 513565/78
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 AA



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Bates a/s: *See*—
Rovnjev, Vjatsjeslev, 4,241,153, Cl. 430-4.000.

AB Karlstads Mekaniska Werkstad: *See*—
Wahren, Douglas, 4,240,872, Cl. 162-344.000.

Abbadessa, Joseph J.; and Johnson, Bruce K., to Polaroid Corporation. Light integrator circuit with built-in anticipation. 4,241,280, Cl. 315-151.000.

Abbott Laboratories: *See*—
Kim, Yung D., 4,241,044, Cl. 424-1.000.

Abe, Masao: *See*—
Iwama, Akio; Kihara, Yasuo; and Abe, Masao, 4,240,914, Cl. 210-500.200.

Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, to Hokkaido University. Method of obtaining information of a specified or target area of a living body near its skin surface by the application of a nuclear magnetic resonance phenomenon. 4,240,439, Cl. 128-653.000.

Aberg, Ulf: *See*—
Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, 4,240,815, Cl. 65-2.000.

Abex Pagid Reibbelag GmbH: *See*—
Tillenburg, Johannes, 4,240,530, Cl. 188-250.00E.

ACF Industries, Incorporated: *See*—
Alaniz, Ruben G., 4,240,460, Cl. 137-327.000.
Carlson, Edwin S., 4,240,607, Cl. 251-144.000.
Partridge, Charles C., 4,240,608, Cl. 251-167.000.

Acosta, Robert G., to International Business Machines Corporation. Method and apparatus for establishing tab settings and indexing parameters, and printouts representing same, for a word processing system. 4,240,758, Cl. 400-279.000.

Adams, Frederick J.; and Lehman, Ralph M., to Cam Gears Limited. Rack and pinion assemblies. 4,240,306, Cl. 74-498.000.

Adams, Harold R. Leaking weld repair clamp. 4,240,650, Cl. 285-10.000.

Adams, James E.: *See*—
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,241,156, Cl. 430-41.000.

Adams, Kenneth D., to Singer Company, The. Motorized drive for a sewing machine including belt tensioning means. 4,240,368, Cl. 112-220.000.

Adams, Roy D.: *See*—
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.

Adjemian, Alain: *See*—
Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, 4,241,030, Cl. 423-126.000.

Adler, Edward. Drum for electrodeposited copper foil production. 4,240,894, Cl. 204-281.000.

Adolphi, Heinrich: *See*—
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.

Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Preparation of 2-nitro-2-methyl-1-propanol. 4,241,226, Cl. 568-704.000.

Aeration Industries, Inc.: *See*—
Inhofer, Harold G.; and De Veau, John E., 4,240,990, Cl. 261-87.000.

Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer: *See*—
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, 4,240,432, Cl. 128-305.500.

AGA Aktiebolag: *See*—
Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, 4,240,691, Cl. 350-63.000.
Wendelin, Rurik; and Sipek, Ladislav, 4,240,798, Cl. 23-230.00A.

Agee, John H.; and Norris, Richard W., Jr. Apparatus for removing foreign matter from cotton. 4,240,902, Cl. 209-241.000.

AGFA-Gevaert, A.G.: *See*—
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, 4,240,744, Cl. 355-74.000.
Saleck, Wilhelm; and von Rintelen, Harald, 4,241,173, Cl. 430-569.000.
Wick, Richard, 4,240,726, Cl. 354-25.000.
Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

AGFA-GEVAERT N.V.: *See*—
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.

Ahl, Thomas J.: *See*—
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.

Ahmed, Adel A. A., to RCA Corporation. Television vertical ramp generator. 4,241,265, Cl. 307-228.000.

Aigner, Rudolf: *See*—
Muller-Schiedmayer, Gunther; and Aigner, Rudolf, 4,240,980, Cl. 564-153.000.

Aihara, Kenji; and Takahashi, Masashi, to Sumitomo Metal Industries Ltd. Nonmagnetic alloy steel having improved machinability. 4,240,827, Cl. 75-123.0AA.

Aisin Seiki Kabushiki Kaisha: *See*—
Nakamura, Kazuaki; and Momose, Yutaka, 4,240,262, Cl. 62-55.500.
Yamazaki, Takeo; and Miyagishi, Shigeki, 4,240,307, Cl. 74-503.000.

Akhavi, David S., to American Hospital Supply Corporation. Autoclavable transparent needle. 4,240,423, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Syringe locking sleeve. 4,240,424, Cl. 128-218.00R.

Akhavi, David S., to American Hospital Supply Corporation. Syringe with plug type needle hub lock. 4,240,425, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Syringe coupling system. 4,240,426, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Needle with protector. 4,240,427, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Segmented syringe locking sleeve. 4,240,428, Cl. 128-218.00R.

Akimura, Yoshitaka: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.

Akinc, Mufit: *See*—
Hulbert, Clarence E., Jr.; Fan, Liang-Tseng; and Akinc, Mufit, 4,240,952, Cl. 260-42.130.

Akopian, Leonid A.: *See*—
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Aktiebolaget Ogrens Svets-och Mek. Verkstad: *See*—
Ogren, Hans, 4,240,661, Cl. 294-82.0AH.

Aktiebolaget SKF: *See*—
Hallerback, Stig L.; and Lachonius, Leif, 4,240,777, Cl. 425-130.000.

Akubov, Gleb S.: *See*—
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Akzona Incorporated: *See*—
Allen, Thomas C., 4,240,937, Cl. 260-17.4CL.
Linnecke, Carl B.; and Wong, Daniel, 4,240,751, Cl. 356-409.000.
McNeely, Gerald W., 4,240,926, Cl. 252-408.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Exchanged mordenite catalysts and processes for producing the same. 4,240,932, Cl. 252-455.00Z.

Alaniz, Ruben G., to ACF Industries, Incorporated. Means for limiting floating movement of gate valve seats. 4,240,460, Cl. 137-327.000.

Albanese, Damian F.; and Klein, Albert M., to International Telephone and Telegraph Corporation. PRC/FM CW Radar system. 4,241,347, Cl. 343-9.00R.

Albany International Corp.: *See*—
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

Alberts, Heinrich: *See*—
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,241,197, Cl. 525-309.000.

Albright, James A., to Velsicol Chemical Corporation. Haloalkyl phosphates. 4,240,953, Cl. 260-45.70P.

Alduk, Dennis F.: *See*—
Alduk, Frank P.; and Alduk, Dennis F., 4,240,237, Cl. 53-247.000.

Alduk, Frank P.; and Alduk, Dennis F. Container lifting, transporting and releasing apparatus. 4,240,237, Cl. 53-247.000.

Alexanderson, Verner, to American Cyanamid Company. Recovery of nitrated aromatic compounds from nitration wash liquors. 4,241,229, Cl. 568-939.000.

Alexandrov, Nikolai N.: *See*—
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., to Mobil Oil Corporation. Epithermal neutron detector. 4,241,253, Cl. 250-390.000.

Allen, Thomas C., to Akzona Incorporated. Alloy fibers of rayon and an alkali metal or ammonium salt of an azeotropic copolymer of polyacrylic acid and methacrylic acid having improved absorbency. 4,240,937, Cl. 260-17.4CL.

Allied Chemical Corporation: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., 4,240,966, Cl. 260-340.50R.

Allocca, Michael A., to Pitney Bowes Inc. Database updating apparatus. 4,241,405, Cl. 364-466.000.

Alloy Surfaces Company, Inc.: *See—*
Baldi, Alfonso L., 4,241,147, Cl. 428-652.000.

Alonso, Oscar, to International Telephone and Telegraph Corporation. Method of making conductive elastomer connector. 4,240,198, Cl. 29-876.000.

Alspaugh, Mark H.; and Murphy, Lawrence R., to Ball Brothers Research Corporation. Feed network scanning antenna employing rotating directional coupler. 4,241,352, Cl. 343-700.0MS.

Altex Scientific, Inc.: *See—*
Shackelford, Carl L., 4,240,429, Cl. 128-218.0NV.

Altman, Murray; and Bellasalma, Gerald J., to Thermasol, Ltd. Whirlpool system. 4,240,166, Cl. 4-542.000.

Altringer, Paulette B.: *See—*
Borrowman, S. Ralph; and Altringer, Paulette B., 4,241,028, Cl. 423-54.000.

Aluminum Pechiney: *See—*
Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, 4,241,030, Cl. 423-126.000.

Amax Inc.: *See—*
Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, 4,240,886, Cl. 204-112.000.
Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, 4,241,031, Cl. 423-150.000.

Amburn, Raymond D., to Dickey-john Corporation. Magnetic seed planter. 4,240,365, Cl. 111-1.000.

American Bank Note Company: *See—*
Hazelton, Robert H.; and Kimball, John J., 4,240,347, Cl. 101-153.000.

American Cyanamid Company: *See—*
Alexanderson, Verner, 4,241,229, Cl. 568-939.000.
Diehl, Robert E.; and Kendall, Roger V., 4,240,822, Cl. 71-92.000.
Grudzinskas, Charles V.; and Weiss, Martin J., 4,241,221, Cl. 562-470.000.
Hanifin, John W.; and Ridge, David N., 4,241,077, Cl. 424-275.000.
Stretanski, Joseph A., 4,240,954, Cl. 260-45.75F.

American Hoechst Corporation: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.

American Hospital Supply Corporation: *See—*
Akhavi, David S., 4,240,423, Cl. 128-218.00N.
Akhavi, David S., 4,240,424, Cl. 128-218.00R.
Akhavi, David S., 4,240,425, Cl. 128-218.00N.
Akhavi, David S., 4,240,426, Cl. 128-218.00N.
Akhavi, David S., 4,240,427, Cl. 128-218.00N.
Akhavi, David S., 4,240,428, Cl. 128-218.00R.
Hazen, Thomas A., 4,240,422, Cl. 128-218.00N.

American Optical Corporation: *See—*
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

American Sterilizer Company: *See—*
Baran, Walter J., 4,241,010, Cl. 422-2.000.

Ammons, Vernon G., to PPG Industries, Inc. Laminated safety glass with polyurethane film. 4,241,140, Cl. 428-339.000.

AMP Incorporated: *See—*
Bunnell, Edward D.; and Sotolongo, Thomas J., 4,240,687, Cl. 339-99.00R.
Cobaugh, Robert F.; and Taylor, Attalee S., 4,241,381, Cl. 361-413.000.
Hintze, William; and Shirk, Albert, 4,241,277, Cl. 313-500.000.
Sotolongo, Thomas J., 4,240,688, Cl. 339-122.00F.

Anchor Wire Corporation: *See—*
Hogg, James W., 4,240,549, Cl. 206-303.000.

Anderson, Bernice J. Folding shampoo chair. 4,240,662, Cl. 297-17.000.

Anderson Company of Indiana, The: *See—*
Harbison, William H.; and Mohnach, Michael G., 4,240,177, Cl. 15-250.320.

Anderson, Glenn A., Sr.: *See—*
Kreick, John R.; and Anderson, Glenn A., Sr., 4,241,292, Cl. 219-541.000.

Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, to United States of America, Navy. Bending pad thrust bearing. 4,240,676, Cl. 308-9.000.

Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., to Lindsay Manufacturing Company. Center pivot irrigation system with corner watering arrangement. 4,240,582, Cl. 239-11.000.

Anderson, Lawrence: *See—*
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, 4,240,161, Cl. 3-1.500.

Anderson, Richard D.; and Wedel, John A., to Pako Corporation. Modular punch marking apparatus. 4,240,741, Cl. 355-40.000.

Anderson, Vernon B.: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.

Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., to Duni Bila AB. Bag-like liquid containers, especially for medical treatment. 4,240,482, Cl. 150-8.000.

Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., to Gambro AB. Flow meter. 4,240,291, Cl. 73-861.050.

Andoh, Takeshi: *See—*
Ueda, Masato; and Andoh, Takeshi, 4,241,110, Cl. 427-203.000.

Andreeva, Nina K.: *See—*
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K., 4,240,818, Cl. 71-59.000.

Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., to American Optical Corporation. Variable threshold R-wave detector. 4,240,442, Cl. 128-708.000.

Andress, Harry J., Jr., to Mobil Oil Corporation. Fuel containing novel detergent. 4,240,803, Cl. 44-63.000.

Andros Incorporated: *See—*
Elder, William L., 4,241,309, Cl. 328-115.000.

Anegawa, Yoshiro: *See—*
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, 4,240,392, Cl. 123-145.00A.

Anestos, Themos C., to Exxon Research & Engineering Co. Method and apparatus for operating an ink jet. 4,241,357, Cl. 346-140.00R.

Ang, Peter G. P.; and Sammells, Anthony F., to Institute of Gas Technology. Gas fixation solar cell using gas diffusion semiconductor electrode. 4,240,882, Cl. 204-75.000.

Angelucci, Richard J.: *See—*
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.

Anger, Rudolf, to Sprimag Spritzmaschinenbau GmbH. Spraycoating apparatus with a horizontal run-in for cylindrical bodies. 4,240,373, Cl. 118-301.000.

Angert, Richard W.; and Palmer, Stephen G., to Wagner Electric Corporation. Non-cup cutting master cylinder. 4,240,258, Cl. 60-589.000.

Anglada, Leonard R.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.

Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,241,201, Cl. 525-503.000.

Anschutz & Co., G.m.b.H.: *See—*
Karnick, Hartmut, 4,240,302, Cl. 74-5.460.

Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I. Directly liquid cooled rotor for electrical machine. 4,241,269, Cl. 310-61.000.

Aoki, Takashi: *See—*
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,240,331, Cl. 91-434.000.

Aoshima, Terutaka; and Ikemizu, Tokihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric rice cooker with two heaters. 4,241,288, Cl. 219-441.000.

Aoyagi, Takaaki: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.

Aoyagi, Yoshiaki: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Photographic coupler. 4,241,168, Cl. 430-503.000.

Arai, Motomi: *See—*
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.

Arai, Yoshihisa: *See—*
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,052, Cl. 424-180.000.
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,053, Cl. 424-180.000.

Ardrey, Richard J., to PhotoScan South, Inc. System for automatically selecting operations in a random sequential manner. 4,241,376, Cl. 361-166.000.

Ariyoshi, Hisashi: *See—*
Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.

Arkwin Industries, Inc.: *See—*
Deutsch, Edward J., 4,240,332, Cl. 92-5.00L.

Armbruster, John W. Method and means for controlling explosive dust with computer programmed stratified fuel injected combustion. 4,240,379, Cl. 123-23.000.

Armington, Robert M.: *See—*
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

Armstrong Cork Company: *See—*
Shaub, Melvin H., 4,240,991, Cl. 261-92.000.

Arntz, Hans-Joachim, to Kabel- und Metallwerke, Gutehoffnungshutte AG. Making thermally-insulated tubing. 4,240,850, Cl. 156-78.000.

Arvin Industries, Inc.: *See—*
Chesnut, Amos E.; and Parrigin, Albert J., 4,240,401, Cl. 126-121.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nomura, Katsuhiko; and Haraguchi, Keisuke, 4,240,734, Cl. 354-173.000.

Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.

Asano, Koin, to Kanebo, Ltd. Artificial leather having chinchilla-like appearance and natural suede-like feeling and a method for producing the same. 4,241,122, Cl. 428-90.000.

Asano, Takehiro, to Daiichi Shoji Co., Ltd. Car light with detachable plug. 4,241,385, Cl. 362-258.000.

Ashida, Itaru, to Kabushiki Kaisha Seikosha. Simulated pendulum clock. 4,241,437, Cl. 368-134.000.

Ashie, Yutaka; and Nakamura, Yasuhiro, to Mitsubishi Paper Mills, Ltd. Process for producing highly glossy coated paper. 4,241,143, Cl. 428-512.000.

Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, to Commissariat a l'Energie Atomique. Circuit for measuring the charge stored in a charge-coupled device. 4,241,262, Cl. 307-221.00D.

Audeh, Costandi A.; and Yan, Tsoung-yuan, to Mobil Oil Corporation. Process for refining hydrocarbon oils. 4,240,901, Cl. 208-324.000.

Audi NSU Auto Union AG: *See*—
Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, 4,240,227, Cl. 49-348.000.

Auten, Charles R.: *See*—
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Automatisation-Sogemo: *See*—
Mariaulle, Claude, 4,240,651, Cl. 285-39.000.

Avery International Corporation: *See*—
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

Avrameas, Stratis; and Guesdon, Jean-Luc, to Etablissement declare d'Utilite Publique diti Institut Pasteur. Magnetic gel suitable to immunoenzymatic determinations. 4,241,176, Cl. 435-7.000.

Awazu, Takao: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

B. F. Goodrich Company, The: *See*—
Kroenke, William J., 4,240,955, Cl. 260-45.75R.
Lai, John T., 4,240,961, Cl. 260-239.30R.

B. R. MacKay & Sons. Inc.: *See*—
MacKay, Michael T., 4,240,617, Cl. 266-170.000.

Baba, Yoshihiko; and Horikoshi, Hiroyoshi, to Sankyo Company Limited. Agents for promoting reproductive ability of domestic animals. 4,241,082, Cl. 424-309.000.

Babcock & Wilcox Company, The: *See*—
McDonald, Dennis K., 4,240,602, Cl. 248-58.000.
Thompson, William L., 4,241,303, Cl. 323-19.000.

Bacconnet, Eugene: *See*—
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

Bader, Bill B. Fireplace stove. 4,240,403, Cl. 126-193.000.

Baer, Ralph H.: *See*—
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.

Baertsch, Richard D.: *See*—
Engeler, William E.; and Baertsch, Richard D., 4,241,263, Cl. 307-221.00D.

Bahder, George; and Rabinowitz, Mario, to Electric Power Research Institute, Inc. Method of forming dielectric material for electrical cable and resulting structure. 4,241,233, Cl. 174-15.00C.

Bahler, Lawrence G.; and Moshier, Stephen L., to Dialog Systems, Inc. Continuous speech recognition method for improving false alarm rates. 4,241,329, Cl. 340-146.30R.

Bailey, Robert J., to Mobay Chemical Corporation. Moldable polyurethane foam-backed fabrics. 4,241,131, Cl. 428-262.000.

Bain-Smith, Timothy: *See*—
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, 4,240,725, Cl. 354-3.000.

Bakal, Abraham I.: *See*—
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.

Baker, Gerald S.: *See*—
Hahn, Guerry L.; and Baker, Gerald S., 4,240,609, Cl. 251-282.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion aluminized age-hardenable stainless steel. 4,241,147, Cl. 428-652.000.

Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, to Kendall Company, The. Device for measuring a urine discharge. 4,241,017, Cl. 422-58.000.

Ball Brothers Research Corporation: *See*—
Alspaugh, Mark H.; and Murphy, Lawrence R., 4,241,352, Cl. 343-700.0MS.

Ball, Edward T., to GTE Lenkurt Electric (Canada) Ltd. Power regulator for use with line signal repeaters which are remotely powered. 4,241,243, Cl. 179-170.00J.

Bank Computer Network Corporation: *See*—
Fish, Leonard A.; and Fiterman, Charles E., 4,241,420, Cl. 364-900.000.

Bankstahl, Norbert, to Friedrich Grohe Armaturenfabrik GmbH & Co. Recessed valve. 4,240,462, Cl. 137-377.000.

Bannister, Michael J., to Commonwealth Scientific and Industrial Research Organization. Oxygen sensors. 4,240,891, Cl. 204-195.00S.

Baran, Walter J., to American Sterilizer Company. Pressure responsive conditioning control gas sterilization. 4,241,010, Cl. 422-2.000.

Barber, Donald T., to Datafile Limited. System for alphabetically labelling articles. 4,240,848, Cl. 156-64.000.

Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., to United States of America, Navy. Transducer-reflector system. 4,241,432, Cl. 367-151.000.

Baresh, Joseph M.; and Nash, Robert E., to Boeing Company, The. Ovality measuring device and method. 4,240,206, Cl. 33-174.00Q.

Barnes, Brian S., to Modern Automatic Alarms Limited. Automatically supervised alarm system. 4,241,335, Cl. 340-507.000.

Barnes, Donald E., to Champion International Corporation. Abrasion and crack resistant package laminate. 4,241,130, Cl. 428-216.000.

Barnes, James R.: *See*—
United States of America, National Aeronautics and Space Administration; Barnes, James R.; and Huang, Marshall Y., 4,241,312, Cl. 329-50.000.

Barnett, Clarence E.: *See*—
Barnett, Forest H.; and Barnett, Clarence E., 4,240,485, Cl. 152-219.000.

Barnett, Forest H.; and Barnett, Clarence E., to Barnett, Forest H. Nonskid tire chain connector means. 4,240,485, Cl. 152-219.000.

Barney, Howard H., to Dunn Instruments, Inc. Multiple image camera. 4,240,729, Cl. 354-76.000.

Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I. Coin holder. 4,240,544, Cl. 206-0.820.

Barter, Archie M., to Tektronix, Inc. Horizontal deflection circuit including protection for output transistor. 4,241,296, Cl. 315-397.000.

Barth, C. Richard. Roller conveyor carriage and lading supporting rack. 4,240,353, Cl. 104-93.000.

Barth, Rudolf: *See*—
Guilino, Gunter; and Barth, Rudolf, 4,240,719, Cl. 351-169.000.

Barth, Wayne E., to Pfizer Inc. Penam 1,1-dioxides as beta-lactamase inhibitors. 4,241,050, Cl. 424-114.000.

Bartko, John: *See*—
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.

Bartlett, Ronald D. Belt tightening apparatus. 4,240,611, Cl. 254-237.000.

BASF Aktiengesellschaft: *See*—
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.
Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, 4,240,792, Cl. 8-607.000.
Graser, Fritz, 4,240,793, Cl. 8-594.000.
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.
Laas, Harald; Nissen, Axel; Oppenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.

BASF Wyandotte Corporation: *See*—
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,011, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,012, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,013, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,016, Cl. 422-17.000.
Newkirk, David D.; and Login, Robert B., 4,241,224, Cl. 568-619.000.

Bates, Richard L.: *See*—
D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W., 4,240,288, Cl. 73-141.00A.

Battelle Memorial Institute: *See*—
Harmer, Alan L., 4,240,747, Cl. 356-133.000.
Regnault, Alain; and Sachetto, Jean-Pierre, 4,241,089, Cl. 426-2.000.

Baucom, Keith B., to United States of America, Air Force. F-Phenylalkylene oxide diacetylenes. 4,241,223, Cl. 568-611.000.

Bauer, Werner R., to Robertshaw Controls Company. Reversing valve construction and parts therefor and methods of making the same. 4,240,469, Cl. 137-625.660.

Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, to BASF Aktiengesellschaft. Aroylureas. 4,240,979, Cl. 564-44.000.

Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, to BASF Aktiengesellschaft. After-treatment of dyed or printed synthetic fibers. 4,240,792, Cl. 8-607.000.

Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, to Siemens Aktiengesellschaft. Display device comprising a liquid crystal cell with light valves. 4,240,711, Cl. 350-345.000.

Bauschke, Guenter: *See*—
Wirges, Winfried; and Bauschke, Guenter, 4,240,619, Cl. 267-65.00R.

Baxter Travenol Laboratories, Inc.: *See*—
Bayham, Edward L., 4,240,481, Cl. 150-8.000.

Bayer Aktiengesellschaft: *See*—
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.
Dickore, Karlfried; and Lurssen, Klaus, 4,240,820, Cl. 71-76.000.
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.
Hetzel, Hartmut, 4,241,043, Cl. 423-659.000.
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.
Schubart, Rudiger, 4,240,983, Cl. 568-316.000.
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,241,197, Cl. 525-309.000.
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.
Wenzel, Wolfgang; Meckel, Walter; and Pedain, Josef, 4,240,942, Cl. 260-29.2TN.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Lobe, Hartwig; and Dietz, Wolfgang, 4,241,328, Cl. 340-75.000.

Bayham, Edward L., to Baxter Travenol Laboratories, Inc. Seal for flexible container having flexible, generally conical portions. 4,240,481, Cl. 150-8.000.

Bayless, John H., to Du Pont de Nemours, E. I., and Company. Modified polyester films. 4,241,170, Cl. 430-533.000.

BBC Brown, Boveri & Company, Limited: *See*—
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.

Beaver, David L.: *See*—
Benjamin, Milton L.; and Beaver, David L., 4,240,207, Cl. 33-185.00R.

Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, to Bayer Aktiengesellschaft. 2-Cyanoethyl isocyanide dichloride. 4,240,977, Cl. 260-465.50R.

Beckenstein, Leonard. Method of knitting and knitting machine arrangement therefor. 4,240,273, Cl. 66-42.00R.

Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, to Carl Freudenberg. Annular seal. 4,240,643, Cl. 277-164.000.

Becker, Hans: *See*—
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.

Becton, Dickinson and Company: *See*—
Materia, Peter; and Desai, Jayraj S., 4,241,188, Cl. 435-296.000.

Beecham Group Limited: *See*—
Cassidy, Frederick; and Goudie, Alexander C., 4,241,074, Cl. 424-273.00R.

Beisang, Arthur A.: *See*—
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,240,794, Cl. 8-94.110.

Belden, William P.: *See*—
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

Bell, Harris N.; and Morton, Alexander R., to Jiffy Manufacturing Company, Inc. Reel having honeycomb core. 4,240,593, Cl. 242-71.800.

Bell Telephone Laboratories, Incorporated: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.
Celler, George K.; and Miller, Gabriel L., 4,240,843, Cl. 148-1.500.
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.
Ebert, Harry K., Jr., 4,241,261, Cl. 307-45.000.
Jacobs, Richard M.; and Sinha, Ashok K., 4,240,196, Cl. 29-578.000.
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., 4,241,322, Cl. 333-202.000.
Johnson, Bruce K., 4,240,724, Cl. 354-197.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., 4,240,693, Cl. 350-96.140.
Johnson, Leo F., 4,241,109, Cl. 427-162.000.
Nash, Donald H., 4,241,236, Cl. 179-2.0EA.
Suggs, John W., 4,241,206, Cl. 542-424.000.
Wang, Tsuey T., 4,241,128, Cl. 428-212.000.

Bell, William A. Microscope remote control focus attachment. 4,240,708, Cl. 350-321.000.

Bellasalma, Gerald J.: *See*—
Altman, Murray; and Bellasalma, Gerald J., 4,240,166, Cl. 4-542.000.

Bellman, Donald R.: *See*—
Montoya, Lawrence C.; and Bellman, Donald R., 4,240,290, Cl. 73-178.00R.

Beloit Corporation: *See*—
Sokolow, Nickolas N., 4,241,009, Cl. 264-532.000.

Benattar, Andre: *See*—
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Bendix Corporation, The: *See*—
Kerr, Leo A., 4,241,310, Cl. 328-119.000.
Merriweather, Kenneth A., 4,241,342, Cl. 340-753.000.
Reddy, Junuthula N., 4,240,382, Cl. 123-485.000.
Tuss, John J., 4,240,205, Cl. 33-1.00M.

Benilan, Jacques, to Les Applications Hydrauliques R. Sarrazin S.A. Integrated control device for a fluid circuit and applications thereof. 4,240,255, Cl. 60-453.000.

Benjamin, Daniel R., to Cuisinarts, Inc. Capacitive braking switching system for home appliances with induction motor drive. 4,241,302, Cl. 318-758.000.

Benjamin, Milton L.; and Beaver, David L., to Erickson Tool Company. Tool presetting device. 4,240,207, Cl. 33-185.00R.

Benson, Carl F., to Torrington Company, The. Bearing race. 4,240,682, Cl. 308-216.000.

Bentley, Donald J., to Bentley Laboratories, Inc. Dialyzer and method of dialysis. 4,240,907, Cl. 210-646.000.

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Bentley, Donald J., 4,240,907, Cl. 210-646.000.

Bentz, Allan J., to Simmonds Precision Products, Inc. Viscosimeter. 4,240,286, Cl. 73-59.000.

Benzie, Robert J.; and Waddan, Dhafir Y., to Imperial Chemical Industries Limited. Manufacture of 3-pentene nitrile. 4,240,976, Cl. 260-465.300.

Berg, Roy C., to UOP Inc. Process for sulfonation of gas oils. 4,240,978, Cl. 260-505.00P.

Berggren, Gosta E. Combined pedal mechanism for combined accelerator and brake pedal for motor-cars. 4,240,308, Cl. 74-512.000.

Bergman, Carl P., to Whirlco, Inc. Captive mixing cap arrangement for multiple chamber container. 4,240,566, Cl. 222-135.000.

Bergman, Lee H.; Evangelista, John J.; and Herring, William M., to BASF Wyandotte Corporation. Phthalic acid diester preparation with waste stream purification and recycle. 4,241,216, Cl. 560-99.000.

Bergwerksverband GmbH: *See*—
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.

Bernatt, Joseph, to S & C Electric Company. Circuit interrupting device. 4,241,248, Cl. 200-145.000.

Berni, Albert J.; and Parrish, John F., to Shell Oil Company. Line compensated seismic amplifier. 4,241,428, Cl. 367-21.000.

Berni, Alberto. Implementation for applying a lining to the inner wall of a tubular article. 4,240,775, Cl. 425-110.000.

Berstein, Garrj, to W. Hegenscheidt Gesellschaft mbH. Boring tool with a floating knife. 4,240,770, Cl. 408-83.000.

Bertone, Gregory A., to Mine Safety Appliances Company. Control system for battery-operated pump. 4,241,299, Cl. 318-474.000.

Bertsch, Richard: *See*—
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.

Berube, Richard R.: *See*—
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.

Bessinger, Walter L., to Clarke-Gravely Corporation. Carpet cleaning powder dispenser. 4,240,569, Cl. 222-220.000.

BFG Glassgroup: *See*—
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

BICC Limited: *See*—
Delhees, Peter; and Conlan, John P., 4,240,184, Cl. 24-279.000.
Milne, James, 4,240,995, Cl. 264-36.000.

Bickel, James G.: *See*—
Hambor, John G.; and Bickel, James G., 4,241,360, Cl. 357-56.000.

Biedermann, Ernst: *See*—
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, 4,240,744, Cl. 355-74.000.

Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., to Kendall Company, The. Syringe assembly. 4,240,430, Cl. 128-218.00P.

Bingham, Alpheus, Jr., to Eli Lilly and Company. Method of stabilization of kinetically controlled triaryl phosphite-halogen compounds. 4,240,988, Cl. 260-989.000.

Bingham, Richard C., to Du Pont de Nemours, E. I., and Company. Organic pigments derived from coumarin. 4,240,967, Cl. 260-343.450.

Bio-Lab, Inc.: *See*—
Grayson, Joel, IV; and Kahle, Donald P., 4,241,025, Cl. 422-263.000.

Bird, Richard M.: *See*—
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Bish, Ralph E.; and Suzuki, Arata, to Capintec Inc. Thin-film window for nuclear instruments and method of making same. 4,240,491, Cl. 160-380.000.

Black, Alister, to Universal Development Company Ltd. Process and apparatus for continuously prestressing concrete products. 4,240,776, Cl. 425-111.000.

Black & Decker Inc.: *See*—
Walton, Richard E., II; and Sauerwein, William D., 4,240,204, Cl. 30-393.000.

Blanc, Serge L.; and Smith, William R., to Caere Corporation. Handheld optical character recognition wand with visual aligner. 4,240,748, Cl. 356-138.000.

Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Pigmentary hardener-containing curable silicate compositions. 4,240,838, Cl. 106-84.000.

Blatt, L. Douglas: *See*—
Blatt, Leland F.; and Blatt, L. Douglas, 4,240,467, Cl. 137-625.660.

Blatt, Leland F.; and Blatt, L. Douglas. Valve assembly. 4,240,467, Cl. 137-625.660.

Blatter, Harold; and Tults, Juri, to RCA Corporation. Automatic turn-off apparatus for a radio or television receiver. 4,241,450, Cl. 455-182.000.

Blazewicz, Andrzej: *See*—
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

BLM Automatic Clutch Limited: *See*—
Pierce, Robert B.; and Wilson, Robert B., 4,240,535, Cl. 192-17.00C.

Block, Jacob, to W. R. Grace & Co. Drilling mud viscosifier. 4,240,915, Cl. 252-8.50B.

Block, Jacob, to W. R. Grace & Co. Compositions capable of forming aqueous systems having pseudoplastic properties. 4,240,924, Cl. 252-317.000.

Blomquist, Alfred P., to Chrysler Corporation. Torsional isolator for torque converter lock-up mechanism. 4,240,532, Cl. 192-3.280.

Bloom, Allen; and Burke, William J., to RCA Corporation. Ablative optical recording medium. 4,241,355, Cl. 346-135.100.

Bloomquist, Marvin G.; and Wang, Yung-liang, to Mobil Oil Corporation. Velocity determination and stacking process for seismic exploration of three dimensional reflection geometry. 4,241,429, Cl. 367-52.000.

Blount, David H. Process for the production of alkali-metal-cellulose-silicate foams and their reaction products. 4,241,194, Cl. 521-82.000.

Boberski, William G.: *See*—
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.

Boch, Jean C.: *See*—
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.

Bock, Erik, to Superfos Emballage A/S. Nestable container. 4,240,554, Cl. 206-519.000.

Bocsanczy, Janos: *See*—
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.

Body Guard, Inc.: *See*—
Farque, Anthony, 4,241,332, Cl. 340-326.000.

Boehringer Ingelheim GmbH: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

Boehringer Mannheim GmbH: *See*—
Stumpf, Albert; and Strejcek, Jan, 4,240,912, Cl. 210-321.200.

Boeing Company, The: *See*—
Baresh, Joseph M.; and Nash, Robert E., 4,240,206, Cl. 33-174.00Q.
Dunstan, Phillip E., 4,240,537, Cl. 198-334.000.
Harris, Alfred W., 4,240,250, Cl. 60-39.09D.

Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, to Ciba-Geigy Corporation. Acaricidal 1-alkylthio-substituted and 1-phenylthio substituted 2-(phenoxyalkyl)-2-imidazolines. 4,241,075, Cl. 424-273.00R.

Bofinger, Gerhard: *See*—
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, 4,240,432, Cl. 128-305.500.

Boich, Heinz-Horst, to J. H. Benecke GmbH. Absorbent structure. 4,240,416, Cl. 128-156.000.

Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,240,199, Cl. 30-43.600.

Bolhofer, William A., to Merck & Co., Inc. Substituted ureas and processes for their preparation. 4,241,072, Cl. 424-270.000.

Bolt Associates, Inc.: *See*—
Chelminski, Stephen V., 4,240,518, Cl. 181-107.000.

Bolton, Douglas R.; and Werling, John M., to Cadaco, Inc. Toss ball construction. 4,240,639, Cl. 273-346.000.

Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, to Troponwerke Dinklage & Co. Organonitrogen derivatives of 2-benzopyranone. 4,241,207, Cl. 542-427.000.

Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, to Fabrique d'Horlogerie de Fontainemelon S.A. Method of manufacturing of electronic modules for timepieces and electronic module obtained by carrying out this method. 4,241,436, Cl. 368-88.000.

Boone, Arthur M., to Eastman Kodak Company. Light deflector for use in illumination apparatus. 4,241,392, Cl. 362-342.000.

Bordow, Richard A. Fluid aspiration device and technique for reducing the risk of complications. 4,240,433, Cl. 128-347.000.

Borg-Warner Corporation: *See*—
Falk, John C., 4,240,947, Cl. 260-29.20E.

Borrelli, Nicholas F.; and Wedding, Brent M., to Corning Glass Works. Colored photochromic glasses and method. 4,240,836, Cl. 106-47.00Q.

Borrowman, S. Ralph; and Altringer, Paulette B., to United States of America, Interior. Sorption of tungsten from alkaline solutions. 4,241,028, Cl. 423-54.000.

Boston University, The Trustees of: *See*—
Rothschild, Kenneth J.; and Clark, Noel A., 4,241,005, Cl. 264-311.000.

Boswell, George A., Jr.; and Henderson, Rosetta M., to Du Pont de Nemours, E. I., and Company. Fluoro analogs of hydrocodone and oxycodone useful as analgesics, narcotic antagonists or both. 4,241,065, Cl. 424-260.000.

Botz, Jakob; Mutschler, Erich; and Weber, Adam, to ITT Industries, Inc. Motorized headlamp position adjusting circuit. 4,241,260, Cl. 307-10.0LS.

Bouko, Jean: *See*—
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.

Bowerman, Paul D.; and Lucid, Michael F., to Kerr-McGee Corporation. Reductive stripping process for the recovery of either or both uranium and vanadium. 4,241,027, Cl. 423-10.000.

Bowers, Harry J., to General Electric Company. Lamp lead to wire attachment for integral string sets. 4,241,387, Cl. 362-252.000.

Bowler, Jean, to Imperial Chemical Industries Limited. Prostane derivatives. 4,241,215, Cl. 560-55.000.

Bowling, Teamus, to General Electric Company. Heat sensing apparatus for an electric range automatic surface unit control. 4,241,289, Cl. 219-450.000.

Brach, Ulrich K. G., to Zeller-Plastik Koehn, Grabner & Co. Clamping device and its use. 4,240,604, Cl. 248-316.00D.

Braid, Milton, to Mobil Oil Corporation. Process of preparing sulfurized olefins. 4,240,958, Cl. 260-139.000.

Braithwaite, John C., to Vickers Shipbuilding Group Ltd. Winch mechanism. 4,240,613, Cl. 254-315.000.

Brammerlo, Allen A., to General Electric Company. Dynamoelectric machine and stationary assembly therefor. 4,241,274, Cl. 310-259.000.

Brand, Peter; and Helms, Adolf, to Hauni-Werke Korber & Co. KG. Solenoid operated valve. 4,240,468, Cl. 137-625.330.

Brandenstein, Manfred: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.

Bray, Ross N. Specialty hand tool. 4,240,190, Cl. 29-268.000.

Brecht, Frederick R. Information data microfilm projector for vehicles. 4,240,722, Cl. 353-12.000.

Breitling, Wolfram, to Robert Bosch GmbH. Frequency generator suitable for use as position-frequency transducer. 4,241,317, Cl. 331-65.000.

Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, to Rockwool Aktiebolaget. Method for determining the surface weight of a mineral wool mat. 4,240,815, Cl. 65-2.000.

Brendel, Thomas E., to Carrier Corporation. Refrigeration system - method and apparatus. 4,240,263, Cl. 62-115.000.

Brentham, Jerry D. Multi-purpose exercising device. 4,240,627, Cl. 272-130.000.

Breslow, David S., to Hercules Incorporated. Epoxy-sulfonylazide compounds. 4,240,971, Cl. 260-348.430.

Breslow, Jeffrey D.: *See*—
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.

Bret, Alain: *See*—
Fabiani, Henri; and Bret, Alain, 4,240,742, Cl. 355-46.000.

Breville Holdings Pty. Limited: *See*—
McClean, John W., 4,240,338, Cl. 99-501.000.

Brewster Laboratories, Inc.: *See*—
Levine, Stella R., 4,240,760, Cl. 401-201.000.

Bricker, James C.: *See*—
Elsbernd, Carl A.; and Bricker, James C., 4,240,809, Cl. 55-118.000.

Bridgestone Tire Co., Ltd.: *See*—
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.

Brikenshtein, Khaim-Mordkhe A.: *See*—
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Brill, Klaus; and Grothe, Wolfgang, to Robert Bosch GmbH. Recording medium for thermographic recording of data items. 4,241,356, Cl. 346-135.100.

Bristol-Myers Company: *See*—
Durbak, Taras; and Nersesian, Ara, 4,241,048, Cl. 424-45.000.
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Britson, Stanley. Truss lifting hook and method for using same. 4,240,658, Cl. 294-19.00R.

Broacha, Firoze H.: *See*—
Sivachenko, Eugene W.; and Broacha, Firoze H., 4,241,146, Cl. 428-600.000.

Bross, Charles F., to Pennwalt Corporation. Scanner for detecting and indicating missing and wedged articles in slat-type counting machine. 4,241,293, Cl. 235-92.0PK.

Broussard, Mayo. Shoe spike. 4,240,215, Cl. 36-67.00D.

Brown, Edward M.; and Towns, Edward J. Dispensing device with interchangeable valves providing free pour and measured pour. 4,240,570, Cl. 222-442.000.

Brown, Harry. Slot machine device. 4,240,635, Cl. 273-138.00A.

Brown, James W., to C. R. Laurence Co., Inc. Display package. 4,240,552, Cl. 206-459.000.

Brown & Root, Inc.: *See*—
Gracia, Bert E., 4,240,767, Cl. 405-227.000.

Brownfield, Charles H. Manipulative skill game. 4,240,628, Cl. 273-1.00R.

Brownlow, Susan E. Refrigerated cigarette pack facsimile. 4,240,271, Cl. 62-457.000.

Bruck, Gernot K., to Lommel, Hermann; and Diamant Test Gesselschaft fur Edelsteinprufungen mbH. Method for the quantitative determination of turbidities, especially of immune reactions. 4,240,753, Cl. 356-442.000.

Bruemmer, Heinz-Dieter: *See*—
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.

Bryers, Richard W.; and Taylor, Thomas E., to Foster Wheeler Energy Corporation. Fluidized bed start-up apparatus and method. 4,240,364, Cl. 110-347.000.
Buchegger, Joachim: *See*—
Heitmann, Uwe; and Buchegger, Joachim, 4,240,448, Cl. 131-21.00R.
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., to Miles Laboratories, Inc. 3-Methylene flavanones and 3-methylene chromanones. 4,241,069, Cl. 424-263.000.
Bucolo, Giovanni: *See*—
Madappally, Mathew M.; and Bucolo, Giovanni, 4,241,179, Cl. 435-16.000.
Bukoschek, Romuald L., to U.S. Philips Corporation. Dryshaving apparatus. 4,240,200, Cl. 30-43.920.
Bullington, Eddy W.: *See*—
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.
Bump, Russell E. Test fixture having switching means for facilitating transformer turns ratio testing. 4,241,306, Cl. 324-55.000.
Bunnell, Edward D.; and Sotolongo, Thomas J., to AMP Incorporated. Transition block for terminating flat conductors. 4,240,687, Cl. 339-99.00R.
Bunzl & Biach Aktiengesellschaft: *See*—
Hemersam, Rudolf, 4,240,946, Cl. 260-28.5AS.
Burk, George A., to Dow Chemical Company, The. Stabilized aqueous antimicrobial composition. 4,241,080, Cl. 424-304.000.
Burke, Anthony B., to Thomas Broadbent & Sons Limited. Washer and hydro-extractors. 4,240,913, Cl. 210-373.000.
Burke, Hubert K.; and Michon, Gerald J., to General Electric Company. Solid state imaging apparatus. 4,241,421, Cl. 365-183.000.
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, to RCA Corporation. Optical memory with injection laser as light source and detector. 4,241,423, Cl. 365-215.000.
Burke, William J.: *See*—
Bloom, Allen; and Burke, William J., 4,241,355, Cl. 346-135.100.
Burkhart, James H., to Diamond International Corporation. Paper forming roll construction. 4,240,871, Cl. 162-274.000.
Burlington Industries Inc.: *See*—
Imboden, Walter H.; and Lieberman, David M. (said Walter H. Imboden assors. to), 4,240,160, Cl. 2-239.000.
Burroughs Corporation: *See*—
Flora, Laurence P.; and Wiener, Daniel P., 4,241,414, Cl. 364-786.000.
Kronies, Reinhard K., 4,241,419, Cl. 364-900.000.
Burwasser, Herman, to GAF Corporation. Electrostatically imageable drafting film. 4,241,134, Cl. 428-331.000.
Bushman, W. Thomas: *See*—
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, 4,241,237, Cl. 179-2.0AM.
Bussjager, Rudy C., to Carrier Corporation. Heat pump system. 4,240,269, Cl. 62-324.00A.
Busto, Jerry T., to Gemini Seals, Inc. Piston seal. 4,240,644, Cl. 277-194.000.
Byrne, Leroy H.; and Fassman, Arnold, to Pitney Bowes Inc. Controller for rotary collator. 4,241,247, Cl. 200-61.410.
C. R. Laurence Co., Inc.: *See*—
Brown, James W., 4,240,552, Cl. 206-459.000.
Cadaco, Inc.: *See*—
Bolton, Douglas R.; and Werling, John M., 4,240,639, Cl. 273-346.000.
Caere Corporation: *See*—
Blanc, Serge L.; and Smith, William R., 4,240,748, Cl. 356-138.000.
Callahan, Lynn T.: *See*—
Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.
Cam Gears Limited: *See*—
Adams, Frederick J.; and Lehman, Ralph M., 4,240,306, Cl. 74-498.000.
Cameron Iron Works, Inc.: *See*—
Hahn, Guerry L.; and Baker, Gerald S., 4,240,609, Cl. 251-282.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Electrodeposition display device. 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Electrodeposition display device. 4,240,717, Cl. 350-363.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See*—
Courtenay, Terence H.; and Cruickshank, James M., 4,240,746, Cl. 356-5.000.
Canada Packers Limited: *See*—
Mag, Theodore K.; and Reid, Margaret P., 4,240,972, Cl. 260-424.000.
Canning, Rodger G.; and Tomlinson, John P., to Reed International Limited. Foam plastics sheet materials. 4,241,125, Cl. 428-158.000.
Cannon, Robert L., III: *See*—
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.
Canon Denshi Kabushiki Kaisha: *See*—
Kyogoku, Hiroshi, 4,240,345, Cl. 101-103.000.
Canon Kabushiki Kaisha: *See*—
Fujibayashi, Kazuo, 4,240,705, Cl. 350-220.000.
Fukuda, Tadaji; and Misumi, Teruo, 4,241,158, Cl. 430-86.000.
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,240,720, Cl. 352-170.000.
Ikawa, Kazuo, 4,241,369, Cl. 361-8.000.
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.
Kyogoku, Hiroshi, 4,240,345, Cl. 101-103.000.
Masaki, Katsumi; and Kitamura, Takashi, 4,241,415, Cl. 364-900.000.
Momiyama, Kikuo, 4,240,703, Cl. 350-214.000.
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.
Takano, Eiichi, 4,240,697, Cl. 350-183.000.
Tsuji, Sadahiko; and Sato, Yasuhisa, 4,240,698, Cl. 350-184.000.
Capintec Inc.: *See*—
Bish, Ralph E.; and Suzuki, Arata, 4,240,491, Cl. 160-380.000.
Caplin, Peter B. Combustion apparatus. 4,240,378, Cl. 122-4.00D.
Caravello, John C. Cigarette and cigar extinguisher. 4,240,449, Cl. 131-235.0ST.
Carborundum Company, The: *See*—
Ferrantini, Salvatore, 4,240,230, Cl. 51-168.000.
Myles, Thomas A., 4,240,833, Cl. 106-39.600.
Carcey, Jacques P., to Commissariat a l'Energie Atomique. Equipment for sintering under pressure. 4,240,780, Cl. 425-407.000.
Carl Freudenberg: *See*—
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.
Carl Still GmbH & Co. KG, Firma: *See*—
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.
Carl Zeiss-Stiftung: *See*—
Tausch, Walter; and Gausmann, Hans, 4,240,752, Cl. 356-436.000.
Carlberg, John R.: *See*—
Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, 4,241,031, Cl. 423-150.000.
Carle, Udo, to Koehring GmbH - Bomag Division. Hydraulic vibration exciter and method of cooling thereof. 4,240,326, Cl. 91-39.000.
Carli, Richard T., to United Technologies Corporation. Computer network, line protocol system. 4,241,398, Cl. 364-200.000.
Carlson, Edwin S., to ACF Industries, Incorporated. Top operated tank car lading valve also operable from the bottom. 4,240,607, Cl. 251-144.000.
Carluccio, John F. Cosmetic jar. 4,240,560, Cl. 215-12.00R.
Carnaud Total Interplastic: *See*—
Flamand, Guy; and Gregoire, Jean-Francois, 4,241,008, Cl. 264-529.000.
Carnes, Donald W., to Electro-Therm, Inc. Mounting means for sheathed heating elements and method. 4,241,291, Cl. 219-536.000.
Carr, James R. Syringe shield for radioactive materials. 4,240,421, Cl. 128-215.000.
Carr, Peter; and Chi, Chen H., to Energy Development Associates, Inc. Method for control of edge effects of oxidant electrode. 4,241,150, Cl. 429-51.000.
Carrier Corporation: *See*—
Brendel, Thomas E., 4,240,263, Cl. 62-115.000.
Bussjager, Rudy C., 4,240,269, Cl. 62-324.00A.
Carstens, Marion R., to Georgia Tech Research Institute. Transport system with blocking valve control. 4,240,768, Cl. 406-19.000.
Carter, William D. M.: *See*—
Scrine, Gerald R.; and Carter, William D. M., 4,240,266, Cl. 62-196.00B.
Carter, William W., to Sybron Corporation. Method of forming a platinum layer on tantalum. 4,240,878, Cl. 204-1.00T.
Carughi, Carlo: *See*—
Martinengo, Pier C.; and Carughi, Carlo, 4,241,113, Cl. 427-229.000.
Casas, Raul E., to Perkin-Elmer Corporation, The. Field corrector for two mirror objective systems. 4,240,702, Cl. 350-200.000.
Cassidy, Frederick; and Goudie, Alexander C., to Beecham Group Limited. Prostaglandin analogues. 4,241,074, Cl. 424-273.00R.
Castall Incorporated: *See*—
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.
Castel, Yvon; and Cholet, Henri, to Institut Francais du Petrole. Drill bit with suction jet means. 4,240,513, Cl. 175-340.000.
Casutt, Toni. Process and device for the erection of cardboard trays. 4,240,337, Cl. 493-137.000.
Caterpillar Tractor Co.: *See*—
Comer, Glen S., Jr., 4,240,614, Cl. 254-393.000.
Hedgcock, Richard L.; and Whitehurst, Gerald E., 4,240,534, Cl. 192-13.00R.
Riediger, Craig W., 4,240,457, Cl. 137-101.000.
Roussin, Michael A., 4,240,642, Cl. 277-84.000.
Starr, Darrel N., 4,240,648, Cl. 280-760.000.
Vinton, David S., 4,240,863, Cl. 156-361.000.
Cauwet, Daniele: *See*—
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.
Celanese Corporation: *See*—
Lin, Victor J., 4,240,864, Cl. 156-441.000.
Celler, George K.; and Miller, Gabriel L., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Forming self-guarded p-n junctions by epitaxial regrowth of amorphous regions using selective radiation annealing. 4,240,843, Cl. 148-1.500.

Cellier, Alfred: *See*—
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., to Bell Telephone Laboratories, Incorporated. Organization for dynamic random access memory. 4,241,425, Cl. 365-222.000.
Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag": *See*—
Podgorski, Wojciech; and Stas, Justyn, 4,240,666, Cl. 299-31.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.
Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag": *See*—
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Centro Ricerche Fiat S.p.A.: *See*—
Urbinati, Mario; and Nannini, Alessandro, 4,240,384, Cl. 123-470.000.
Centronics Data Computer Corp.: *See*—
Hanna, Samuel Y., 4,240,757, Cl. 400-196.100.
Century Products, Inc.: *See*—
Meeker, Paul K., 4,240,625, Cl. 272-86.000.
Cerberus AG: *See*—
Tresch, Erwin; and Muggli, Jurg, 4,241,282, Cl. 250-574.000.
Certek, Inc.: *See*—
Grantham, James I., 4,241,020, Cl. 422-109.000.
Champenois, Michel M. L., to Produits Chimiques Ugine Kuhlmann. 1,2-Dialkyl-3-phenyl-5-[4-(N-alkyl or N,N-dialkyl)amino-2-benzoylamino-phenylazo]pyrazolium dyestuffs. 4,240,959, Cl. 260-147.000.
Champion International Corporation: *See*—
Barnes, Donald E., 4,241,130, Cl. 428-216.000.
Chan, David C. K., to Chevron Research Company. Fungicidal 3-(N-acyl-N-arylamino)-gamma-butyrolactones and gamma-butyrothiolactones. 4,241,078, Cl. 424-275.000.
Chapman, Francis E., to S. C. Johnson & Son, Inc. Thixotropic abrasive liquid scouring composition. 4,240,919, Cl. 252-95.000.
Chase, Albert T.: *See*—
Douglass, James D.; and Chase, Albert T., 4,241,324, Cl. 336-217.000.
Chashnik, Pavel I.: *See*—
Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I., 4,241,269, Cl. 310-61.000.
Chattha, Mohinder S., to Ford Motor Company. Coating composition catalyzed with phosphonic acid derivative - I. 4,241,196, Cl. 525-161.000.
Chelminski, Stephen V., to Bolt Associates, Inc. Method and apparatus for monitoring and controlling a multiplicity of air guns for seismic surveying. 4,240,518, Cl. 181-107.000.
Chemical Applicator, Inc.: *See*—
Hughes, Gary W., 4,240,583, Cl. 239-157.000.
Chemplate Corporation: *See*—
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A. Porous heat-insulation material. 4,241,138, Cl. 428-403.000.
Chernenko, Nikolai P.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Taybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Chesnut, Amos E.; and Parrigin, Albert J., to Arvin Industries, Inc. Fireplace heat exchanger. 4,240,401, Cl. 126-121.000.
Chevron Research Company: *See*—
Chan, David C. K., 4,241,078, Cl. 424-275.000.
Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.
Chi, Chen H.: *See*—
Carr, Peter; and Chi, Chen H., 4,241,150, Cl. 429-51.000.
Chiariello, Ned A., to Keystone Ferrule & Nut Corporation. Support assembly. 4,240,603, Cl. 248-125.000.
Chibnik, Sheldon, to Mobil Oil Corporation. Reaction products of hydroxy aromatic or alkylphenylether compounds and alkenylsuccinic acid, anhydride, or ester. 4,240,970, Cl. 260-346.740.
Chicago Bridge & Iron Company: *See*—
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.
Choate, James R. Log-burning stove. 4,240,399, Cl. 126-58.000.
Choinski, Edward J.: *See*—
Clapp, Roger C.; and Choinski, Edward J., 4,241,171, Cl. 430-539.000.
Cholet, Henri: *See*—
Castel, Yvon; and Cholet, Henri, 4,240,513, Cl. 175-340.000.
Cholin, John M., to Firetek Corporation. Ultraviolet fire detector. 4,241,258, Cl. 250-372.000.
Chrisman, Max G., to Owens-Corning Fiberglas Corporation. Production of platinum group metal layer on a refractory. 4,240,847, Cl. 156-62.200.
Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G. Calcitonin. 4,241,051, Cl. 424-177.000.
Chrysler Corporation: *See*—
Blomquist, Alfred P., 4,240,532, Cl. 192-3.280.
Chu, Chang K.: *See*—
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.
Chundelak, Louis W., Jr. Pull chain attachment for rotary light switch. 4,241,249, Cl. 200-161.000.
Church, Charles J. Electric massage apparatus and method. 4,240,437, Cl. 128-420.00R.
Chwae, John C., to Giddings & Lewis, Inc. Coated abrasive superfinishing stone and method of making same. 4,240,232, Cl. 51-356.000.
CH_2O, Inc.: *See*—
Courtright, Burr, 4,240,584, Cl. 239-189.000.
Ciarico, Anthony J.: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.
Ciba-Geigy Corporation: *See*—
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.
Rasheed, Khalid; and Warkentin, James D., 4,240,821, Cl. 71-90.000.
Citizen Watch Co., Ltd.: *See*—
Fujita, Hiro; and Tsuzuki, Akira, 4,241,435, Cl. 368-85.000.
Murata, Mitsuhiro, 4,241,441, Cl. 368-247.000.
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., to Philagro S.A. New plant growth regulating compositions which contain derivatives of N-acyl methionine. 4,240,823, Cl. 71-98.000.
Clapp, Roger C.; and Choinski, Edward J., to Polaroid Corporation. Hardener in carrier layer. 4,241,171, Cl. 430-539.000.
Clark, Noel A.: *See*—
Rothschild, Kenneth J.; and Clark, Noel A., 4,241,005, Cl. 264-311.000.
Clark, Roy: *See*—
Pole, Ernest G.; and Clark, Roy, 4,240,860, Cl. 156-327.000.
Clarke-Gravely Corporation: *See*—
Bessinger, Walter L., 4,240,569, Cl. 222-220.000.
Clarke, Thomas P. Oil sands hot water extraction process. 4,240,897, Cl. 208-11.0LE.
Clemar Manufacturing Corp.: *See*—
Ruggles, Richard L., 4,241,375, Cl. 361-166.000.
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., to Bell Telephone Laboratories, Incorporated. Dynamic random access memory. 4,240,195, Cl. 29-571.000.
Clemons, Donald G.: *See*—
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.
Clinton, Henry H. Continuous continuity monitor for monitoring the continuity of an insulated wire conductor. 4,241,304, Cl. 324-51.000.
Clot, Philippe: *See*—
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.
Clow Corporation: *See*—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.
Coachmen Industries, Inc.: *See*—
Krein, Reuben J., 4,240,193, Cl. 29-451.000.
Coalite and Chemical Products Limited: *See*—
Gladwin, Keith, 4,241,225, Cl. 568-652.000.
Cobaugh, Robert F.; and Taylor, Attalee S., to AMP Incorporated. Bus bar assembly for circuit cards. 4,241,381, Cl. 361-413.000.
Cobb, Raymond F.: *See*—
Snell, James L.; and Cobb, Raymond F., 4,241,454, Cl. 455-260.000.
Coburn, James D.: *See*—
Peters, Russell E., 4,240,157, Cl. 2-161.00R.
Coca-Cola Company, The: *See*—
Shaw, Harold L., 4,240,267, Cl. 62-238.00E.
Cocron, Istvan: *See*—
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.
Cohen, Joel B., to Shell Container Systems. Method of making a package having foam inserts. 4,240,240, Cl. 53-410.000.
Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, to Aluminum Pechiney. Continuous process for obtaining pure alumina from an acidic liquor originating from the chlorosulphuric attack of an aluminous ore and for the purification of the liquor which has been freed from alumina. 4,241,030, Cl. 423-126.000.
Colgate Palmolive Company: *See*—
Colodney, Daniel; and Norfleet, James, 4,241,049, Cl. 424-54.000.
Collin, Herbert S. Washing machine agitator brace. 4,240,550, Cl. 206-320.000.
Collins, David A.; and Lile, Derek L., to United States of America, Navy. Electrolytic blocking contact to InP. 4,241,167, Cl. 430-314.000.
Colodney, Daniel; and Norfleet, James, to Colgate Palmolive Company. Stable dentifrice. 4,241,049, Cl. 424-54.000.
Colton, Russell F.: *See*—
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.
Combustion Engineering, Inc.: *See*—
McGee, John K., 4,240,455, Cl. 137-77.000.
Comer, Glen S., Jr., to Caterpillar Tractor Co. Sheave block and seal assembly therefor. 4,240,614, Cl. 254-393.000.
Comera, Jean; and Jaussaud, Claude, to Commissariat a l'Energie Atomique. Fast-switching multi-wavelength laser. 4,241,318, Cl. 331-94.50C.

Commissariat a l'Energie Atomique: *See—*
Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, 4,241,262, Cl. 307-221.00D.
Carcey, Jacques P., 4,240,780, Cl. 425-407.000.
Comera, Jean; and Jaussaud, Claude, 4,241,318, Cl. 331-94.50C.
Delafosse, Jacques, 4,240,876, Cl. 176-78.000.
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Bannister, Michael J., 4,240,891, Cl. 204-195.00S.

Compur-Electronic Gesellschaft mit beschrankter Haftung: *See—*
Retzer, Erich, 4,240,749, Cl. 356-246.000.

Conlan, John P.: *See—*
Delhees, Peter; and Conlan, John P., 4,240,184, Cl. 24-279.000.

Conley, Norman E.: *See—*
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Connell, John L., to Davis Instruments Corporation. Apparatus for disposing corner cube reflector for detection. 4,241,349, Cl. 343-18.00C.

Conoco, Inc.: *See—*
Dareing, Donald W., 4,240,506, Cl. 166-367.000.

Conviron, Inc.: *See—*
Roth, Jonathan N., 4,241,186, Cl. 435-243.000.

Cooke, Anson R.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,240,819, Cl. 71-76.000.

Copelin, Harry B., to Du Pont de Nemours, E. I., and Company. Pd/SiO_2 Hydrogenation catalyst suitable for H_2O_2 manufacture. 4,240,933, Cl. 252-455.00R.

Coquio, Claude: *See—*
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.

Corbin, Normand D.: *See—*
McCauley, James W.; and Corbin, Normand D., 4,241,000, Cl. 264-65.000.

Cornelisse, Roelof: *See—*
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.

Corning Glass Works: *See—*
Borrelli, Nicholas F.; and Wedding, Brent M., 4,240,836, Cl. 106-47.00Q.

Cotuplas S.A., Zone industrielle: *See—*
Girardier, Raymond, 4,240,238, Cl. 53-373.000.

Coulter Electronics, Inc.: *See—*
Madappally, Mathew M.; and Bucolo, Giovanni, 4,241,179, Cl. 435-16.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,241,160, Cl. 430-124.000.

Counsell, Raymond E.; and Lucchesi, Benedict R., to University of Michigan, The Regents of the. 1-(Trialkylamino)-3-(phenylphenoxy)-2-propanol quarternary salts. 4,241,088, Cl. 424-329.000.

Courtenay, Terence H.; and Cruickshank, James M., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense. System for transmitter frequency control in coherent ladar. 4,240,746, Cl. 356-5.000.

Courtright, Burr, to CH_2O, Inc. Agricultural vehicle. 4,240,584, Cl. 239-189.000.

Covington, Dorris L. Tackle box. 4,240,222, Cl. 43-57.50R.

CPC International Inc.: *See—*
DiDominicis, Alphonse J., 4,240,841, Cl. 106-211.000.

Craemer, Robert H.; and Evans, Donald J., to Molins Machine Company, Inc. Continuous running corrugator. 4,240,856, Cl. 156-205.000.

Crase, Gary M., to Smith International, Inc. Adjustable bearing assembly. 4,240,683, Cl. 308-227.000.

Crawford, John H., to Leading Plywood Corporation. Wood burner. 4,240,785, Cl. 431-352.000.

Crepeau, Charles E.; and Mulvey, Robert F., to General Electric Company. Thermal insulation material. 4,240,839, Cl. 106-88.000.

Crichlow, Charles A.: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.

Crist, Oliver. Variable stroke engine or compressor. 4,240,386, Cl. 123-48.00B.

Criswell, Bernie R.: *See—*
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.

Crivello, James V., to General Electric Company. Cationically curable organic resin compositions containing sulfonium salts and an organic oxidant. 4,241,204, Cl. 526-333.000.

Croley, Thomas E., to Willamette Industries, Inc. Drum-like fiberboard container for bulk material with funnel-like dispensing bottom. 4,240,565, Cl. 222-105.000.

Cross, Alvan: *See—*
Cross, Robert; Cross, Terrence R.; and Cross, Alvan, 4,240,637, Cl. 273-176.00H.

Cross, Robert; Cross, Terrence R.; and Cross, Alvan. Putting practice apparatus. 4,240,637, Cl. 273-176.00H.

Cross, Terrence R.: *See—*
Cross, Robert; Cross, Terrence R.; and Cross, Alvan, 4,240,637, Cl. 273-176.00H.

Crosser, Jeffrey A., to United Hydraulics Corporation. Mechanically lockable hydraulic cylinder jack. 4,240,334, Cl. 92-23.000.

Cruickshank, James M.: *See—*
Courtenay, Terence H.; and Cruickshank, James M., 4,240,746, Cl. 356-5.000.

Crum, James N.: *See—*
Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Fausone, Alfredo; and Rivelli, Renato, 4,241,320, Cl. 333-18.000.

Cuisinarts, Inc.: *See—*
Benjamin, Daniel R., 4,241,302, Cl. 318-758.000.

Cumming, James M. Film treatment apparatus. 4,241,377, Cl. 361-213.000.

Custom Concepts, Incorporated: *See—*
Kubiatowicz, James F., 4,240,525, Cl. 185-38.000.

Cuthbert, John D.: *See—*
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.

Cuthbertson, Bobbie G.: *See—*
Cuthbertson, Earl A.; and Cuthbertson, Bobbie G., 4,240,209, Cl. 34-10.000.

Cuthbertson, Charles R.: *See—*
Lamond, Trevor G.; and Cuthbertson, Charles R., 4,241,001, Cl. 264-117.000.

Cuthbertson, Earl A.; and Cuthbertson, Bobbie G. Method of and apparatus for drying grain and the like. 4,240,209, Cl. 34-10.000.

Daddato, Dominic. Multidirectional vise square device. 4,240,621, Cl. 269-264.000.

Dahlberg, Stellan: *See—*
Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, 4,240,815, Cl. 65-2.000.

Daignault, Alan J.: *See—*
Wyner, Elliot F.; and Daignault, Alan J., 4,241,276, Cl. 313-487.000.

Daiichi Shoji Co., Ltd.: *See—*
Asano, Takehiro, 4,241,385, Cl. 362-258.000.

Daikin Kogyo Co., Ltd.: *See—*
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

Daly, Benedict D. T.: *See—*
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., 4,240,409, Cl. 128-1.00D.

Danfoss A/S: *See—*
Lehmann, Kjeld; and Rasmussen, Arne V. R., 4,241,380, Cl. 361-383.000.

Daniel, Maurice. Fiber optics illuminator. 4,241,382, Cl. 362-32.000.

Dankert, Gerhard: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.

D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W. Force transducer. 4,240,288, Cl. 73-141.00A.

Dareing, Donald W., to Conoco, Inc. Downhole riser assembly. 4,240,506, Cl. 166-367.000.

Dassen, Bernardus H. N., to Stamicarbon, B.V. Process for biological purification of waste water. 4,240,904, Cl. 210-609.000.

Datafile Limited: *See—*
Barber, Donald T., 4,240,848, Cl. 156-64.000.

Datta, Pabitra; and Friel, Ronald N., to RCA Corporation. Video discs and molding compositions therefor. 4,241,120, Cl. 428-65.000.

Dauvergne, Hector A. Three-stage liquid fuel burner. 4,240,784, Cl. 431-351.000.

David, John M., Jr., to RCA Corporation. Creel. 4,240,594, Cl. 242-131.000.

Davidson, John C.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Davis, Allen V. C. Pressure responsive annunciator. 4,240,372, Cl. 116-271.000.

Davis Instruments Corporation: *See—*
Connell, John L., 4,241,349, Cl. 343-18.00C.

Davis, Richard F., to Dayco Corporation. Tool for and method of removing a die-cutting mat from a rotary anvil. 4,240,192, Cl. 29-426.600.

Davis, Robert: *See—*
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.

Dawson, David G.: *See—*
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.

Day, Lawrence. Rectilinear work finishing apparatus. 4,240,231, Cl. 51-138.000.

Dayco Corporation: *See—*
Davis, Richard F., 4,240,192, Cl. 29-426.600.

Deal, Troy M. Intake balancing and satellite collector system. 4,240,243, Cl. 56-8.000.

Dean, John J.: *See—*
Haydon, Arthur W.; and Dean, John J., 4,241,270, Cl. 310-164.000.

Decker, Joseph A., Jr., to Igloo Corporation. Method for introducing multi-component foam reactants into mold form involving the use of a foaming spacer. 4,240,999, Cl. 264-46.500.

De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, to Texas Instruments Incorporated. Thermal relays particularly for starting single-phase asynchronous motors. 4,241,370, Cl. 361-24.000.

Degel, Josef: *See—*
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.
Delafosse, Jacques, to Commissariat a l'Energie Atomique. Nuclear fuel assembly. 4,240,876, Cl. 176-78.000.
Delhees, Peter; and Conlan, John P., to BICC Limited. Pipe and cable clamps. 4,240,184, Cl. 24-279.000.
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., to Allied Chemical Corporation. Fiber reinforced multi-ply stampable thermoplastic sheet. 4,240,857, Cl. 156-209.000.
Dellinger, Paul L., Jr.: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.
Delmer, Philip T., to Rexnord Inc. Frame structure for a press assembly. 4,240,342, Cl. 100-53.000.
de Luque, Manuel J., to Procter & Gamble Company, The. Detergent bleach composition and process. 4,240,920, Cl. 252-99.000.
Demeter, Akos: *See—*
Demeter, Laszlo; and Demeter, Akos, 4,240,911, Cl. 210-794.000.
Demeter, Laszlo; and Demeter, Akos, to Nikex Nehezipari Kulkereskedelmi Vallalat. Tower filters with reversed water-jet filter regeneration. 4,240,911, Cl. 210-794.000.
Demmin, Timothy R.: *See—*
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., 4,240,966, Cl. 260-340.50R.
Denaldi, Ermanno; and Rolfo, Gian P., to Fiat Veicoli Industriali S.p.A. Retaining clamp for an adjustable steering column. 4,240,305, Cl. 74-493.000.
Denker, Stanley D.: *See—*
Grevich, John J.; and Denker, Stanley D., 4,240,336, Cl. 493-196.000.
de Polo, Harry R. Pants-type garment and method of making the same. 4,240,158, Cl. 2-227.000.
DePuy, Robert P., to General Electric Company. Binary number generation. 4,241,410, Cl. 364-715.000.
Derbyshire, George C., to Jabobs Manufacturing Company, Ltd., The. Breast drills. 4,240,771, Cl. 408-124.000.
Dereser, Ernst, to Owens-Corning Fiberglas Corporation. Glass fiber size composition and process. 4,241,136, Cl. 428-378.000.
deRosset, Armand J.: *See—*
Ginger, Edward A.; and deRosset, Armand J., 4,241,033, Cl. 423-244.000.
Desai, Jayraj S.: *See—*
Materia, Peter; and Desai, Jayraj S., 4,241,188, Cl. 435-296.000.
Desmond, Edwin A., Jr., to Ethyl Corporation. Diesel fuel composition. 4,240,801, Cl. 44-57.000.
Deucker, Walter: *See—*
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.
Deutsch Automobilgesellschaft mbH: *See—*
Klink, Rainer, 4,241,152, Cl. 429-181.000.
Deutsch, Edward J., to Arkwin Industries, Inc. Fluid operated locking actuator. 4,240,332, Cl. 92-5.00L.
Deutsche Babcock Aktiengesellschaft: *See—*
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,240,590, Cl. 241-56.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler: *See—*
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.
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Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.
Devas, Michael B., to National Research Development Corporation. Endoprosthetic patellar device. 4,240,162, Cl. 3-1.910.
De Veau, John E.: *See—*
Inhofer, Harold G.; and De Veau, John E., 4,240,990, Cl. 261-87.000.
De Volder, Noel J.: *See—*
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.
De Vries, Jochem J.: *See—*
Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., 4,240,199, Cl. 30-43.600.
DeVries, Robert C.: *See—*
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., to Sperry Corporation. Virtual address translator utilizing interrupt level code. 4,241,401, Cl. 364-200.000.
De Winter, Walter F.: *See—*
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.
deWitt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Process for producing aromatic aldehydes. 4,240,984, Cl. 568-435.000.
Dialog Systems, Inc.: *See—*
Bahler, Lawrence G.; and Moshier, Stephen L., 4,241,329, Cl. 340-146.30R.
Diamant Test Gesselschaft fur Edelsteinprufungen mbH: *See—*
Bruck, Gernot K., 4,240,753, Cl. 356-442.000.
Diamond International Corporation: *See—*
Burkhart, James H., 4,240,871, Cl. 162-274.000.
Diasonics, Inc.: *See—*
Swain, Allan L., 4,241,412, Cl. 364-731.000.
Diaz, Octavio. Solid waste disposing system. 4,240,769, Cl. 406-108.000.
Dickens, Luther I., to Mead Corporation, The. Polystyrene foam structure. 4,240,557, Cl. 211-153.000.
Dickerson, Arthur F., to Hughes Aircraft Company. Method and apparatus for locating faults in electric cables. 4,241,305, Cl. 324-52.000.
Dickey-john Corporation: *See—*
Amburn, Raymond D., 4,240,365, Cl. 111-1.000.
Dickore, Karlfried; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Method of regulating the growth of plants. 4,240,820, Cl. 71-76.000.
Dickson, John F.; and Oakley, Raymond E., to Plessey Handel und Investments AG. Semiconductor devices. 4,241,424, Cl. 365-218.000.
DiDominicis, Alphonse J., to CPC International Inc. No-carrier corrugating adhesive. 4,240,841, Cl. 106-211.000.
Diegel, Herbert F. Apparatus for dispensing adhesive-backed foil. 4,240,867, Cl. 156-543.000.
Diehl, Robert E.; and Kendall, Roger V., to American Cyanamid Company. Method for controlling undesirable plants using 1H-benzotriazole and 2H-benzotriazole compounds. 4,240,822, Cl. 71-92.000.
Diepers, Heinrich, to Siemens Aktiengesellschaft. Method for manufacturing a photo cathode for electroradiographic and electrofluoroscopic apparatus. 4,240,869, Cl. 156-643.000.
Dietz, Richard E.; and Nowlin, Oscar D., to Phillips Petroleum Company. Polymerization of olefins. 4,240,929, Cl. 252-429.00B.
Dietz, Wolfgang: *See—*
Lobe, Hartwig; and Dietz, Wolfgang, 4,241,328, Cl. 340-75.000.
Di Giovanni, Mario, to Micro Gage, Inc. Displacement sensing transducer. 4,241,325, Cl. 338-4.000.
Digital Equipment Corporation: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.
Dill, Douglas W., to S. C. Johnson & Son, Inc. Removable coatings which prevent penetration from felt tip marking inks. 4,241,141, Cl. 428-500.000.
Din, Zia U.: *See—*
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.
Diziere, Bernard, to Societe d'Exploitation des Etablissements Bregeon-Cochard. Novel case for an electric pocket flashlight. 4,241,384, Cl. 362-203.000.
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Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.
Dobson, John V., to National Research Development Corporation. Methods of measuring the concentrations of ions. 4,240,879, Cl. 204-1.00T.
Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Schael, Wilfried, 4,240,408, Cl. 128-1.00R.
Dodge, Dennis, to Itek Corporation. Unique gear drive mechanism for camera-processor. 4,240,730, Cl. 354-90.000.
Doken, Masanobu: *See—*
Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.
Dollhausen, Manfred: *See—*
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.
Dooley, Thomas E., to Westinghouse Electric Corp. Fluorescent lamp adapter for residential incandescent-type lamp fixture. 4,241,386, Cl. 362-216.000.
Doring, Fritz: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.
Dorrian, John F., to Erie Technological Products, Inc. Base metal electrode capacitor and method of making the same. 4,241,378, Cl. 361-305.000.
Douglas, Joseph, to Rolls-Royce Limited. Optical probe. 4,240,706, Cl. 350-286.000.
Douglass, James D.; and Chase, Albert T., to McGraw-Edison Company. Magnetic core for electrical transformers. 4,241,324, Cl. 336-217.000.
Dow Chemical Company, The: *See—*
Burk, George A., 4,241,080, Cl. 424-304.000.
Harris, Robert F.; and Wagener, Earl H., 4,240,982, Cl. 564-285.000.
Lefevre, Lloyd E.; and Wegenka, Mark A., 4,241,127, Cl. 428-177.000.
Marton, Henry J.; and Kurfman, Virgil B., 4,241,129, Cl. 428-216.000.
Dowa Mining Co. Ltd.: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., to Imperial Chemical Industries Limited. Cementitious compositions. 4,240,840, Cl. 106-93.000.
Doyle, Brent R., to Harris Corporation. Method of fabricating up diffused substrate FED logic utilizing a two-step epitaxial deposition. 4,240,846, Cl. 148-175.000.
Drabek, Jozef: *See—*
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.

Drake, Harlan. Citizens band radio receiver with squelch control. 4,241,453, Cl. 455-219.000.

Dresser Europe S.A.: *See—*
Schulz, Manfred, 4,240,475, Cl. 141-392.000.

Dresser Industries, Inc.: *See—*
Wetterhorn, Richard H., 4,240,298, Cl. 73-732.000.

Drews, Ulrich: *See—*
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.

Drinkard, B. M., to Mobil Oil Corporation. Control system for the selective hydrogenation of acetylene present in ethylene product streams. 4,241,230, Cl. 585-259.000.

Drop, Paul A., Sr. Cooking with recipes through improved viewing machine or wall screen projection. 4,240,721, Cl. 353-74.000.

Drozdov, Nikolai I.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Dubief, Claude: *See—*
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Duff, John: *See—*
Mahyera, Anil; and Duff, John, 4,240,664, Cl. 299-17.000.

Duke, James I. Combination commode construction. 4,240,168, Cl. 4-326.000.

Dumas, David H., to Hercules Incorporated. Ketene dimer paper sizing compositions. 4,240,935, Cl. 260-9.000.

Dunaev, Jury D.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Duni Bila AB: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.
Persson, Karl R., 4,240,576, Cl. 229-36.000.

Dunleavy, Raymond A., to Union Carbide Corporation. Novel polyester diols. 4,241,199, Cl. 525-445.000.

Dunlop Limited: *See—*
Moore, Alan F., 4,240,763, Cl. 403-203.000.
Wilcox, Brian L., 4,240,488, Cl. 152-361.0FP.

Dunn Instruments, Inc.: *See—*
Barney, Howard H., 4,240,729, Cl. 354-76.000.

Dunstan, Phillip E., to Boeing Company, The. Accelerating and decelerating handrail. 4,240,537, Cl. 198-334.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bayless, John H., 4,241,170, Cl. 430-533.000.
Bingham, Richard C., 4,240,967, Cl. 260-343.450.
Boswell, George A., Jr.; and Henderson, Rosetta M., 4,241,065, Cl. 424-260.000.
Copelin, Harry B., 4,240,933, Cl. 252-455.00R.
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.
Evans, Robert F., 4,240,695, Cl. 350-96.210.
Work, Ray A., III; and Pankratz, Richard P., 4,241,169, Cl. 430-532.000.

Dura-Bilt Products, Inc.: *See—*
Sickler, Raymond W., 4,240,615, Cl. 256-60.000.

Durbak, Taras; and Nersesian, Ara, to Bristol-Myers Company. Suspension composition of benzocaine. 4,241,048, Cl. 424-45.000.

Durney, Carl H.: *See—*
Iskander, Magdy F.; and Durney, Carl H., 4,240,445, Cl. 128-804.000.

Dyachkovsky, Fridrikh S.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

E. R. Squibb & Sons, Inc.: *See—*
Hauck, Frederic P.; and Jacobs, Glenn A., 4,241,059, Cl. 424-248.580.
Ondetti, Miguel A.; and Sprague, Peter W., 4,241,076, Cl. 424-274.000.

Eagle-Picher Industries, Inc.: *See—*
Hayes, Richard H.; and Herrmann, Robert W., 4,241,300, Cl. 318-590.000.
Jurasek, Stanley J., 4,240,555, Cl. 206-511.000.

Eastman Kodak Company: *See—*
Boone, Arthur M., 4,241,392, Cl. 362-342.000.
Esders, Theodore W.; and Goodhue, Charles T., 4,241,178, Cl. 435-15.000.
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,241,163, Cl. 430-213.000.
Webster, Frank G.; and Regan, Michael T., 4,241,157, Cl. 430-41.000.

Eaton Corporation: *See—*
Piber, Earl T.; and Pearson, Robert, 4,241,297, Cl. 318-17.000.

Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Circuit control to limit power drain of auxiliary power supply in UPS system. 4,241,261, Cl. 307-45.000.

Ecker, Alfred, to OMV Aktiengesellschaft. Polymeric compositions and process for their production. 4,240,949, Cl. 260-30.80R.

Edagawa, Setsuji: *See—*
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.

Edmondson, Eliena L. Liquid media clarifier. 4,240,906, Cl. 210-617.000.

Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., to Du Pont de Nemours, E. I., and Company. Magnetic image decorator having rotating cylinders and knife blades associated therewith. 4,240,374, Cl. 118-657.000.

Edwards, Paul A. Circle swing. 4,240,623, Cl. 272-33.00R.

Edwards, Robert B.; and Jayne, Theodore D., to Nibco, Inc. Process of forming multi piece vaporizable pattern for foundry castings. 4,240,492, Cl. 164-34.000.

Efco, Inc.: *See—*
Korytko, Myron I., 4,240,778, Cl. 425-149.000.

EG & G Sealol, Inc.: *See—*
Trimble, Edward F., 4,240,610, Cl. 251-335.00B.

Eibner, Jules A., to Sperry Corporation. Data receiving and processing circuit. 4,241,455, Cl. 455-600.000.

Eich, Clarence C.: *See—*
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-261.000.

Eiffinger, Karlheinz. Apparatus for retrieval and disposal of animal excrements. 4,240,656, Cl. 294-1.0BA.

Eisai Co., Ltd.: *See—*
Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, 4,241,256, Cl. 250-223.00B.

Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., to Foster Wheeler Energy Corporation. Adjustable buckstay system for vapor generators or the like. 4,240,234, Cl. 52-261.000.

Elder, William L., to Andros Incorporated. Synchronizing method and apparatus. 4,241,309, Cl. 328-115.000.

Electric Power Research Institute, Inc.: *See—*
Bahder, George; and Rabinowitz, Mario, 4,241,233, Cl. 174-15.00C.

Electro-Therm, Inc.: *See—*
Carnes, Donald W., 4,241,291, Cl. 219-536.000.

ELEX-AAF AG: *See—*
Frauenfelder, Alfred, 4,240,810, Cl. 55-143.000.

Elfi Elektrofilter AB: *See—*
Jacobsson, Bertil, 4,240,811, Cl. 55-143.000.

Elfotec A.G.: *See—*
Forgo, Gabor, 4,240,723, Cl. 355-3.0DD.

El Gammal, Tarek, to Foseco Trading A.G. Heat-insulating articles. 4,240,496, Cl. 164-138.000.

Eli Lilly and Company: *See—*
Bingham, Alpheus, Jr., 4,240,988, Cl. 260-989.000.

Eilis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., to Gates Learjet Corporation. Wing with improved leading edge for aircraft. 4,240,597, Cl. 244-35.00R.

Elsbernd, Carl A.; and Bricker, James C., to United Air Specialists, Inc. Electrostatic precipitator having traversing collector washing mechanism. 4,240,809, Cl. 55-118.000.

Endler, James F.: *See—*
Pitkjaan, Elam; and Endler, James F., 4,241,391, Cl. 362-267.000.

Endoh, Takao: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Energy Development Associates, Inc.: *See—*
Carr, Peter; and Chi, Chen H., 4,241,150, Cl. 429-51.000.

Energy for Independence, Inc.: *See—*
Ryerson, John D., 4,240,799, Cl. 23-232.00E.

Engel, Norbert: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Engeler, William E.; and Baertsch, Richard D., to General Electric Company. Charge transfer dual frequency delay line with phase independent coupling. 4,241,263, Cl. 307-221.00D.

Engelhard Minerals & Chemicals Corporation: *See—*
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.

Enikolopov, Nikolai S.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Ensing, Hendrik, to Oce-Nederland B.V. Process for transferring a magnetizable developing powder in electrostatic image development. 4,241,161, Cl. 430-126.000.

Entron, Inc.: *See—*
Sears, Kay G., 4,241,372, Cl. 361-72.000.

Envirosol Systems International, Ltd.: *See*—
Vasishth, Ramesh C.; and Wang, Robert S., 4,240,940, Cl. 260-22.00R.
Epstein, Marvin A., to International Telephone and Telegraph Corporation. Secure spread spectrum communication system. 4,241,447, Cl. 375-1.000.
Equipment Technology Incorporated: *See*—
Smith, Ruslon J., 4,240,344, Cl. 101-44.000.
Erickson, Erick E.: *See*—
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.
Erickson Tool Company: *See*—
Benjamin, Milton L.; and Beaver, David L., 4,240,207, Cl. 33-185.00R.
Erico Products, Inc.: *See*—
Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, 4,241,285, Cl. 219-130.320.
Erie Technological Products, Inc.: *See*—
Dorrian, John F., 4,241,378, Cl. 361-305.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Longitudinally movable antifriction bearing with flexural tongue. 4,240,673, Cl. 308-6.00C.
Ernst, M. Eric, to Pivot Manufacturing Company. Car top carrier. 4,240,571, Cl. 224-310.000.
Ersek, Robert A.: *See*—
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,240,794, Cl. 8-94.110.
ESAB Aktiebolag: *See*—
Hornell, Ake, 4,240,709, Cl. 350-335.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., to International Business Machines Corporation. Method of fabricating random access memory device. 4,240,845, Cl. 148-1.500.
Esders, Theodore W.; and Goodhue, Charles T., to Eastman Kodak Company. Process and composition for the quantification of glycerol ATP and triglycerides. 4,241,178, Cl. 435-15.000.
Esquire, Inc.: *See*—
Pustka, Marvin J., 4,240,853, Cl. 156-108.000.
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Avrameas, Stratis; and Guesdon, Jean-Luc, 4,241,176, Cl. 435-7.000.
Ethyl Corporation: *See*—
Desmond, Edwin A., Jr., 4,240,801, Cl. 44-57.000.
Kolich, Charles H., 4,241,034, Cl. 423-300.000.
Shepherd, Lawrence H., Jr., 4,240,985, Cl. 568-483.000.
Ettenberg, Michael: *See*—
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.
Evangelista, John J.: *See*—
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.
Evans, Donald J.: *See*—
Craemer, Robert H.; and Evans, Donald J., 4,240,856, Cl. 156-205.000.
Evans, Robert F. Method and apparatus for crushing and classifying particulate material. 4,240,586, Cl. 241-19.000.
Evans, Robert F. Positive lubricating and indexing bearing assembly. 4,240,674, Cl. 308-8.200.
Evans, Robert F., to Du Pont de Nemours, E. I., and Company. Optical fibers connector. 4,240,695, Cl. 350-96.210.
Evans, Wilbur F.: *See*—
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,240,819, Cl. 71-76.000.
Expert N.V.: *See*—
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,240,245, Cl. 56-341.000.
Exxon Production Research Company: *See*—
Reed, Ronald L., 4,240,504, Cl. 166-273.000.
Exxon Research & Engineering Co.: *See*—
Anestos, Themos C., 4,241,357, Cl. 346-140.00R.
Gilbert, John B.; and Henry, H. Clarke, 4,240,900, Cl. 208-143.000.
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,240,899, Cl. 208-120.000.
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.
Rossi, Albert, 4,240,916, Cl. 252-56.00D.
Sartori, Guido; and Savage, David W., 4,240,922, Cl. 252-189.000.
Sartori, Guido; and Leder, Frederic, 4,240,923, Cl. 252-189.000.
Fabiani, Henri; and Bret, Alain. Continuous photoaensitive support presenting a spatial lap dissolve, its application, a process for obtaining it and a device for implementing the process. 4,240,742, Cl. 355-46.000.
Fabrique d'Horlogerie de Fontainemelon S.A.: *See*—
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Fodder for ruminants. 4,241,085, Cl. 424-319.000.
Faiveley S.A.: *See*—
Georgelin, Alexandre, 4,240,226, Cl. 49-223.000.
Falk, John C., to Borg-Warner Corporation. Cross-linked elastomeric polyester latices. 4,240,947, Cl. 260-29.20E.
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, to Hoffmann-La Roche Inc. Interferon assay. 4,241,174, Cl. 435-5.000.
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., to International Business Machines Corporation. Display apparatus. 4,241,343, Cl. 340-755.000.
Fan, Liang-Tseng: *See*—
Hulbert, Clarence E., Jr.; Fan, Liang-Tseng; and Akinc, Mufit, 4,240,952, Cl. 260-42.130.
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., to U and I, Incorporated. Food supplement from vegetable pulp and method of preparing same. 4,241,093, Cl. 426-258.00C.
Farin, William G., to MEI Systems Inc. Methods for the recovery of sulfur components from flue gas and recycle sodium sulfite by reduction-smelting and carbonating to strip hydrogen sulfide. 4,241,041, Cl. 423-563.000.
Farmer, Michael J., to Hydra Sponge Co., Inc. Windshield cleaning tool holder. 4,240,176, Cl. 15-121.000.
Farmer, Victor C., to National Research Development Corporation. Synthetic imogolite. 4,241,035, Cl. 423-327.000.
Farque, Anthony, to Body Guard, Inc. Personal security alarm. 4,241,332, Cl. 340-326.000.
Farr, Glyn P. R., to Girling Limited. Servo booster assemblies. 4,240,330, Cl. 91-369.00R.
Fassman, Arnold: *See*—
Byrne, Leroy H.; and Fassman, Arnold, 4,241,247, Cl. 200-61.410.
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of electrochemically processing metallic surfaces of workpieces. 4,240,888, Cl. 204-129.750.
Fausone, Alfredo; and Rivelli, Renato, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Circuit arrangement for establishing weighting coefficients in an analog-type adaptive equalizer. 4,241,320, Cl. 333-18.000.
Fauth, Gunter: *See*—
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.
Faxon, Robert L. Mist spray apparatus for air conditioner condenser. 4,240,265, Cl. 62-171.000.
Fedde, Mickiel P.: *See*—
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.
Feedback Limited: *See*—
Strand, Thomas J., 4,241,238, Cl. 179-5.500.
Fehr, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Temperature dependent electronic control switch. 4,240,580, Cl. 236-49.000.
Feighery, James M. Log lifter. 4,240,657, Cl. 294-11.000.
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., to Westinghouse Electric Corp. Reducing the switching time of semiconductor devices by neutron irradiation. 4,240,844, Cl. 148-1.500.
Felice, Patrick E.: *See*—
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., 4,240,992, Cl. 264-21.000.
Ferran, Michel: *See*—
Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, 4,241,030, Cl. 423-126.000.
Ferrantini, Salvatore, to Carborundum Company, The. Throw-away adaptors for grinding wheels. 4,240,230, Cl. 51-168.000.
Ferro Corporation: *See*—
Votava, Werner F.; and Wonnacott, Thomas W., 4,240,837, Cl. 106-48.000.
Fesco, John E., to Studley Paper Company, Inc. Reinforced vacuum cleaner filter bag. 4,240,813, Cl. 55-381.000.
Feuerbaum, Hans P.; and Otto, Johann, to Siemens Aktiengesellschaft. Scanning electron microscope. 4,241,259, Cl. 250-457.000.
Fiat Societa per Azioni: *See*—
Martinengo, Pier C.; and Carughi, Carlo, 4,241,113, Cl. 427-229.000.
Fiat Veicoli Industriali S.p.A.: *See*—
Denaldi, Ermanno; and Rolfo, Gian P., 4,240,305, Cl. 74-493.000.
Fiedler, Hans, to Karl Mayer Textilmaschinenfabrik GmbH. Eyelet bar arrangement for jacquard equipped warp knitting machines. 4,240,275, Cl. 66-203.000.
Field, Andrew S. Inflatable package and method of manufacture. 4,240,556, Cl. 206-522.000.
Figge, Irving E., to United States of America, Army. Structural cores and their fabrication. 4,241,117, Cl. 428-35.000.
Filippov, Dmitry A.: *See*—
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.
Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,240,932, Cl. 252-455.00Z.
Fiquet, Claire: *See*—
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.
Firetek Corporation: *See*—
Cholin, John M., 4,241,258, Cl. 250-372.000.
Fischer, Karl O. P. Process for treatment of bagasse for the production of oil binders. 4,240,800, Cl. 44-51.000.
Fish, Leonard A.; and Fiterman, Charles E., to Bank Computer Network Corporation. Disk data control. 4,241,420, Cl. 364-900.000.
Fisher, Yale: *See*—
Pickering, Norman C.; and Fisher, Yale, 4,240,410, Cl. 128-1.500.
Fisler, Charles F., to General Electric Company. Brightness control circuit for a vacuum fluorescent display. 4,241,294, Cl. 315-291.000.

Fiterman, Charles E.: *See—*
Fish, Leonard A.; and Fiterman, Charles E., 4,241,420, Cl. 364-900.000.

Flamand, Guy; and Gregoire, Jean-Francois, to Carnaud Total Interplastic. Process for manufacture of hollow bodies. 4,241,008, Cl. 264-529.000.

Flanigen, Edith; and Kellberg, Elsa R., to Union Carbide Corporation. Synthetic crystalline zeolite and process for preparing same. 4,241,036, Cl. 423-328.000.

Flickinger, William T.; and Staiger, Donald W., to HPM Corporation. Injection molding machine having dual tonnage traversing cylinder. 4,240,781, Cl. 425-450.100.

Flora, Laurence P.; and Wiener, Daniel P., to Burroughs Corporation. Binary adder employing a plurality of levels of individually programmed PROMS. 4,241,414, Cl. 364-786.000.

Fluorocarbon Company, The: *See—*
Torbet, Christopher J., 4,241,104, Cl. 427-113.000.

Folland, Roy E. Clinical mirror heating device. 4,241,290, Cl. 219-518.000.

Folsom, Robert M.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Forch, Hans: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Ford, Alan A., to Kirsch Company. Shade for recreational vehicle. 4,240,490, Cl. 160-133.000.

Ford Motor Company: *See—*
Chattha, Mohinder S., 4,241,196, Cl. 525-161.000.
Schmatz, Duane J.; and Winterbottom, Walter L., 4,240,574, Cl. 228-217.000.
Simko, Aladar O.; and Schechter, Michale M., 4,240,395, Cl. 123-445.000.

Forgo, Gabor, to Elfotec A.G. Process for electrographic image production and an apparatus for carrying out this process. 4,240,723, Cl. 355-3.0DD.

Forsberg, Ulla I.: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.

Foseco Trading A.G.: *See—*
El Gammal, Tarek, 4,240,496, Cl. 164-138.000.

Foslien, Floyd L., to Minnesota Mining and Manufacturing Company. Hand crimping tool. 4,240,280, Cl. 72-410.000.

Foster Wheeler Energy Corporation: *See—*
Bryers, Richard W.; and Taylor, Thomas E., 4,240,364, Cl. 110-347.000.
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-261.000.

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.

Fowler, Joe W. Heating system and method utilizing recoverable engine heat. 4,240,581, Cl. 237-12.100.

Framatome: *See—*
Millot, Jean-Paul, 4,240,874, Cl. 176-22.000.

Franchina, Antonino. Heat pump having a timer activated furnace. 4,240,404, Cl. 126-427.000.

Franke, Albrecht: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Frankland, James D., Jr., to New Castle Industries, Inc. Injection molding screw for processing heat sensitive polymeric materials. 4,240,755, Cl. 366-88.000.

Frantzen, John J., to Minnesota Micro Metal, Inc. Abrading material. 4,240,806, Cl. 51-295.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,240,352, Cl. 104-12.000.

Frauenfelder, Alfred, to ELEX-AAF AG. Collecting electrode plate assembly. 4,240,810, Cl. 55-143.000.

French, Richard W.: *See—*
D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W., 4,240,288, Cl. 73-141.00A.

French, Roger F. Solar water heater. 4,240,405, Cl. 126-433.000.

Frenette, Remi. Die casting machine for forming internally-threaded articles. 4,240,498, Cl. 164-303.000.

Frenken, Hans: *See—*
Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

Freudenberg, Steffen: *See—*
Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, 4,240,227, Cl. 49-348.000.

Frickel, Fritz-Frieder: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Bankstahl, Norbert, 4,240,462, Cl. 137-377.000.

Friel, Ronald N.: *See—*
Datta, Pabitra; and Friel, Ronald N., 4,241,120, Cl. 428-65.000.

Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., to Union Carbide Agricultural Products, Inc. Method for the inhibition of plant growth. 4,240,819, Cl. 71-76.000.

Fugner, Armin: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,241,154, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.
Tadokoro, Eiichi; and Kitamoto, Tatsuji, 4,241,368, Cl. 360-128.000.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,241,279, Cl. 315-151.000.

Fujibayashi, Kazuo, to Canon Kabushiki Kaisha. Five element photographic objective. 4,240,705, Cl. 350-220.000.

Fujii, Motoharu: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

Fujisawa, Hideya: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.

Fujisawa, Hiroshi: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.

Fujita, Hiro; and Tsuzuki, Akira, to Citizen Watch Co., Ltd. Electronic timepiece oscillator circuit. 4,241,435, Cl. 368-85.000.

Fujita, Kanji: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.

Fujitsu Limited: *See—*
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, 4,241,348, Cl. 343-17.500.

Fujitsu Ten Limited: *See—*
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, 4,241,348, Cl. 343-17.500.

Fukuda, Tadaji; and Misumi, Teruo, to Canon Kabushiki Kaisha. Vacuum deposited electrophotographic photosensitive member. 4,241,158, Cl. 430-86.000.

Fukui, Seiji, to Shimano Industrial Company, Limited. Coaster brake hub with a gear-transmission. 4,240,533, Cl. 192-6.00A.

Fukui, Yoshitake: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

Fukumi, Hirokazu: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.

Fulghum Industries, Inc.: *See—*
Fulghum, Oscar T., Jr., 4,240,588, Cl. 241-80.000.

Fulghum, Oscar T., Jr., to Fulghum Industries, Inc. Wood chipping installation. 4,240,588, Cl. 241-80.000.

Fuller, Ronald G. Cavitation compensating propeller nozzle or duct. 4,240,251, Cl. 60-221.000.

Funada, Fumiaki: *See—*
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

Furlong, Owen D.; and Thring, Robin H., to Normalair-Garrett (Holdings) Limited. Breathable gas delivery regulators. 4,240,419, Cl. 128-204.230.

Furman, Anatoly V. Switching device. 4,241,267, Cl. 307-239.000.

Furst, Leander: *See—*
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.

Furutachi, Nobuo: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.

Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,241,281, Cl. 315-161.000.

G. P. Worsley & Company Limited: *See—*
Worsley, Gilbert P., 4,240,541, Cl. 198-518.000.

Gaafar, Hassan A., to Research Corporation. Purified antigen to test for *Neisseria gonorrheae* antibodies. 4,241,045, Cl. 424-1.000.

Gabb, Philip J.; Monk, Hayden; and Lumsden, John, to Mineral Process Licensing Corporation BV. Reduction of ferric chloride. 4,241,038, Cl. 423-493.000.

Gabrick, Albert. Solder mask composition. 4,240,945, Cl. 260-21.000.

GAF Corporation: *See—*
Burwasser, Herman, 4,241,134, Cl. 428-331.000.

Gagliani, John, to International Harvester Company. Polyimides. 4,241,114, Cl. 427-370.000.

Gagliani, John, to International Harvester Company. Polyimides. 4,241,193, Cl. 521-77.000.

Galileo Electro-Optics Corp.: *See—*
Hambor, John G.; and Bickel, James G., 4,241,360, Cl. 357-56.000.

Galin, Miles A. Medicament coated intraocular lens. 4,240,163, Cl. 3-13.000.

Galowin, Lawrence S.: *See—*
Rakowsky, Edward L.; and Galowin, Lawrence S., 4,240,257, Cl. 60-531.000.

Gambro AB: *See*—
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.

Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, to Metallgesellschaft Aktiengesellschaft. Processing aqueous effluent liquors from degasification or gasification of coal. 4,240,808, Cl. 55-48.000.

Garden, Lorne J.: *See*—
Horn, James N.; and Garden, Lorne J., 4,240,477, Cl. 144-245.00R.

Gardner, James J., to Nordson Corporation. Pump. 4,240,567, Cl. 222-146.0HE.

Garling, David L.: *See*—
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., 4,241,069, Cl. 424-263.000.

Garner, Derek H., to USM Corporation. Shoe upper conforming machine. 4,240,172, Cl. 12-14.500.

Garwin, Richard L.: *See*—
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.

Gasser, Francois W.: *See*—
Hanus, Judith, 4,240,413, Cl. 128-79.000.

Gates Learjet Corporation: *See*—
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Gates Rubber Company, The: *See*—
McPhee, Donald J.; and Gray, Herbert W., 4,240,782, Cl. 425-467.000.
Uba, Toshio, 4,241,151, Cl. 429-94.000.

Gausmann, Hans: *See*—
Tausch, Walter; and Gausmann, Hans, 4,240,752, Cl. 356-436.000.

Gavrilov, Jury A.: *See*—
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Gebruder Junghans GmbH: *See*—
King, Josef, 4,241,440, Cl. 368-204.000.

Gebruder Welger: *See*—
Simonis, Jurgen, 4,240,339, Cl. 100-5.000.

Gehl Company: *See*—
Martin, Virgil B., 4,240,244, Cl. 56-16.400.

Gelsing, Winfried, to Oschatz GmbH. Welded integral tube wall for electric steel-smelting furnace. 4,241,232, Cl. 13-32.000.

Gemini Seals, Inc.: *See*—
Busto, Jerry T., 4,240,644, Cl. 277-194.000.

General Atomic Company: *See*—
Hery, Thomas A.; and Getchen, John G., 4,241,330, Cl. 340-147.00R.

General Binding Corporation: *See*—
Staats, Henry N., 4,241,006, Cl. 264-322.000.

General Dynamics Corporation, Pomona Division: *See*—
Winderman, Jay B.; and Schmid, Hans-Peter, 4,240,596, Cl. 244-3.160.

General Electric Company: *See*—
Bowers, Harry J., 4,241,387, Cl. 362-252.000.
Bowling, Teamus, 4,241,289, Cl. 219-450.000.
Brammerlo, Allen A., 4,241,274, Cl. 310-259.000.
Burke, Hubert K.; and Michon, Gerald J., 4,241,421, Cl. 365-183.000.
Crepeau, Charles E.; and Mulvey, Robert F., 4,240,839, Cl. 106-88.000.
Crivello, James V., 4,241,204, Cl. 526-333.000.
DePuy, Robert P., 4,241,410, Cl. 364-715.000.
Engeler, William E.; and Baertsch, Richard D., 4,241,263, Cl. 307-221.00D.
Fisler, Charles F., 4,241,294, Cl. 315-291.000.
Hatch, Burton D., 4,241,273, Cl. 310-219.000.
Huseby, Irvin C., 4,240,828, Cl. 75-135.000.
Jablonski, Richard J.; and Pauze, Denis R., 4,240,941, Cl. 260-29.2TN.
Kiefer, George E., 4,241,400, Cl. 364-400.000.
Ladusaw, William T., 4,240,774, Cl. 418-248.000.
Laskow, William; and Morelock, Charles R., 4,240,835, Cl. 106-44.000.
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.
Marshall, Robert A., 4,241,272, Cl. 310-219.000.
Prada, Luis E., 4,241,337, Cl. 340-547.000.
Quick, Marshall K., 4,241,264, Cl. 307-221.00D.
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, 4,240,968, Cl. 260-345.200.
Sargisson, Donald F.; and Harris, Vivian G., 4,240,252, Cl. 60-262.000.
Steigerwald, Robert L., 4,241,250, Cl. 219-10.49R.

General Foam Products Limited: *See*—
Sheldon, Neville M.; and Stern, Alfred, 4,241,189, Cl. 521-50.000.

General Foods Corporation: *See*—
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.

General Motors Corporation: *See*—
Harlow, John H., Jr.; and Maywood, Joseph, 4,240,517, Cl. 180-295.000.
Smith, Stanley E., 4,240,366, Cl. 112-121.240.
Vonnegut, George L., 4,240,495, Cl. 164-125.000.

General Signal Corporation: *See*—
Kurbikoff, Peter A., 4,240,686, Cl. 339-14.00R.

Gensthaler, Edmund: *See*—
Giebler, Fritz; and Gensthaler, Edmund, 4,241,333, Cl. 340-365.00S.

Georgelin, Alexandre, to Faiveley S.A. Guiding and actuating device for a sliding door. 4,240,226, Cl. 49-223.000.

Georgia Tech Research Institute: *See*—
Carstens, Marion R., 4,240,768, Cl. 406-19.000.

Geosource Inc.: *See*—
Laird, Christopher B., 4,241,354, Cl. 346-43.000.

Gerlivanov, Evgeny V.: *See*—
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Gertsen, W. Marvin: *See*—
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Getchen, John G.: *See*—
Hery, Thomas A.; and Getchen, John G., 4,241,330, Cl. 340-147.00R.

GF Business Equipment, Inc.: *See*—
Terlecki, Leo, 4,240,685, Cl. 312-217.000.

Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., to Chevron Research Company. Isomerization process for upgrading low-octane light paraffinic feeds using a chlorided platinum-alumina-rhenium catalyst. 4,241,231, Cl. 585-748.000.

Gibson, Rodney W.; and Wells, Raymond, to U.S. Philips Corporation. Automatic frequency control system. 4,241,452, Cl. 455-203.000.

Giddings & Lewis, Inc.: *See*—
Chwae, John C., 4,240,232, Cl. 51-356.000.

Giebler, Fritz; and Gensthaler, Edmund, to Siemens Aktiengesellschaft. Key-operated arrangement for producing code characters. 4,241,333, Cl. 340-365.00S.

Gilbert, John B.; and Henry, H. Clarke, to Exxon Research & Engineering Co. Process for the hydrogenation of olefins and aromatic compounds. 4,240,900, Cl. 208-143.000.

Gilbert, Richard, to Stanley Tools Limited. Replaceable blade knife. 4,240,202, Cl. 30-162.000.

Gilberts, Alexander G., to Reliable Electric Company. Surge voltage arrester with ventsafe feature. 4,241,374, Cl. 361-124.000.

Gillespie, Andrew J., to Philip Morris Incorporated. Rotary cutting knife mounting. 4,240,313, Cl. 83-343.000.

Gilliams, Yvan K.: *See*—
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.

Gilliland, Elbert G. Flush valve control apparatus. 4,240,167, Cl. 4-324.000.

Ginger, Edward A.; and deRosset, Armand J., to UOP Inc. Process for the separation of sulfur oxides from a gaseous mixture containing sulfur oxides and oxygen. 4,241,033, Cl. 423-244.000.

Girardier, Raymond, to Cotuplas S.A., Zone industrielle. Gripping means for machine for filling and closing flexible tubes. 4,240,238, Cl. 53-373.000.

Girgensohn, Bjoern: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.

Girling Limited: *See*—
Farr, Glyn P. R., 4,240,330, Cl. 91-369.00R.

Giroflex Entwicklungs AG: *See*—
Locher, Hermann, 4,240,663, Cl. 297-239.000.

Givens, Wyatt W.: *See*—
Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., 4,241,253, Cl. 250-390.000.

Gladieux, Dennis M., to International Harvester Company. Hose end coupling unit. 4,240,654, Cl. 285-276.000.

Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., to Exxon Research & Engineering Co. Sulfur transfer process in catalytic cracking. 4,240,899, Cl. 208-120.000.

Gladwin, Keith, to Coalite and Chemical Products Limited. Preparation and dehydrogenation of cycloalkanol derivatives. 4,241,225, Cl. 568-652.000.

Glatz, Alfred C.: *See*—
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.

Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A. Vacuum metal die-casting apparatus. 4,240,497, Cl. 164-158.000.

Godde, Franz: *See*—
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Goeth, Hanns: *See*—
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

Golay, Philippe: *See*—
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.

Goldenberg, J. Melvyn, to Proll Molding Company. Keyboard assembly for toy musical instruments. 4,240,321, Cl. 84-433.000.

Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, to Erico Products, Inc. Power supply for SMAW welding and stud welding. 4,241,285, Cl. 219-130.320.

Gomberg, Edward N.; and Somesla, Dana W., to Synair Corporation. Method of bonding urethane formulations to rubber. 4,240,852, Cl. 156-96.000.

Gomi, Shimpei, to Union Carbide Corporation. Process for producing high quality pitch. 4,240,898, Cl. 208-40.000.

Goodhue, Charles T.: *See*—
Esders, Theodore W.; and Goodhue, Charles T., 4,241,178, Cl. 435-15.000.

Goodyear Tire & Rubber Company, The: *See*—
Kuczkowski, Joseph A., 4,241,217, Cl. 560-152.000.
Lal, Joginder; and Sandstrom, Paul H., 4,240,487, Cl. 152-355.000.
Schmit, Georges J. E.; and Welter, Thomas N. H., 4,240,486, Cl. 152-330.00R.

Gora, Bernhard: *See*—
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.

Gorbachev, Jury G.: *See*—
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.

Gordon, Mack. Welding helmet lens assembly. 4,241,286, Cl. 219-147.000.

Goswami, Jagadish C., to Stauffer Chemical Company. Process for making cellular polyvinyl chloride products and products thereof. 4,241,192, Cl. 521-73.000.

Gotaverken Anteknik AB: *See*—
Sjoholm, Bertil H., 4,241,287, Cl. 219-161.000.

Goto, Atsuo, to Olympus Optical Co., Ltd. Objective for video disks. 4,240,704, Cl. 350-220.000.

Goudie, Alexander C.: *See*—
Cassidy, Frederick; and Goudie, Alexander C., 4,241,074, Cl. 424-273.00R.

Gounji, Takashi: *See*—
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.

Gracia, Bert E., to Brown & Root, Inc. Valving methods and apparatus for flooding and grouting offshore jacket sleeves. 4,240,767, Cl. 405-227.000.

Grain Processing Corporation: *See*—
Witt, Paul R.; and Harvey, Richard D., 4,241,183, Cl. 435-95.000.

Granda, Edward J.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Grande, Per-Olof. Flow meter. 4,240,294, Cl. 73-861.47R.

Grantham, James I., to Certek, Inc. Apparatus for biological decontamination and subsequent neutralization of a space. 4,241,020, Cl. 422-109.000.

Granum, Gregory M.: *See*—
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Graser, Fritz, to BASF Aktiengesellschaft. Preparation of a high-hiding and deeply colored pigmentary form of perylene-3,4,9,10-tetracarboxylic acid bis-(4'-ethoxyphenyl)-imide. 4,240,793, Cl. 8-594.000.

Gray, Adrian L., to Tempra Therm Limited. Thermocouples. 4,241,003, Cl. 264-254.000.

Gray, Herbert W.: *See*—
McPhee, Donald J.; and Gray, Herbert W., 4,240,782, Cl. 425-467.000.

Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. 4,240,895, Cl. 204-290.00R.

Grayson, Joel, IV; and Kahle, Donald P., to Bio-Lab, Inc. Chlorinator. 4,241,025, Cl. 422-263.000.

Great Western Sugar Company, The: *See*—
Stein, Brooks M.; and Linden, James C., 4,241,185, Cl. 435-188.000.

Green, Leland D., to United States of America, Air Force. Imagery with constant range lines. 4,240,745, Cl. 356-5.000.

Green, Stanley, to Lucas Industries Limited. High contrast lamp assembly. 4,241,388, Cl. 362-268.000.

Gref, Hans: *See*—
Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

Gregoire, Jean-Francois: *See*—
Flamand, Guy; and Gregoire, Jean-Francois, 4,241,008, Cl. 264-529.000.

Gregoric, Bran F. Spoked wheel. 4,240,483, Cl. 152-75.000.

Greubel, Waldemar: *See*—
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Grevich, John J.; and Denker, Stanley D., to Nordson Corporation. Bag making machine. 4,240,336, Cl. 493-196.000.

Grey, Charles M.: *See*—
Sullivan, James J.; and Grey, Charles M., 4,240,242, Cl. 53-471.000.

Griffin, Andrew J.: *See*—
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

Griffin, Edward L.; and Young, Frederick A., to Hughes Aircraft Company. Reflective dual mode filter. 4,241,323, Cl. 333-209.000.

Griffiths, Edward E. Valve operating system. 4,240,304, Cl. 74-471.00R.

Groch, Mark W.; and Lewis, George K., to Siemens Gammasonics, Inc. Method and apparatus for nuclear kymography providing a motion versus time display of the outer transverse dimensions of an organ. 4,240,440, Cl. 128-654.000.

Grohoski, Raymond J., to Timex Corporation. Timepiece with shaped components. 4,241,442, Cl. 368-294.000.

Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, to L'Oreal. Composition and process for the treatment of keratin materials with polymers. 4,240,450, Cl. 132-7.000.

Gross-Given Manufacturing Company: *See*—
Lennartson, Douglas G., 4,240,563, Cl. 221-75.000.

Gross, Glenn M., to Norlin Industries, Inc. Portamento and glide tone generator having multimode clock circuit. 4,240,318, Cl. 84-1.010.

Gross, Glenn M., to Norlin Industries, Inc. High resolution fractional divider. 4,241,408, Cl. 364-703.000.

Grothe, Wolfgang: *See*—
Brill, Klaus; and Grothe, Wolfgang, 4,241,356, Cl. 346-135.100.

Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A. and Drozdov, Nikolai I. Wire stranding machine. 4,240,246, Cl. 57-58.300.

Grudzinskas, Charles V.; and Weiss, Martin J., to American Cyanamid Company. Novel 11-deoxy-substituted prostaglandins of the E and F series. 4,241,221, Cl. 562-470.000.

Gruter, Otto, to Siemens Aktiengesellschaft. Series-parallel-series charge transfer memory having complete bias charge operation. 4,241,422, Cl. 365-183.000.

GTE Lenkurt Electric (Canada) Ltd.: *See*—
Ball, Edward T., 4,241,243, Cl. 179-170.00J.

GTE Products Corporation: *See*—
Wyner, Elliot F.; and Daignault, Alan J., 4,241,276, Cl. 313-487.000.

Gudea, Dumitru: *See*—
Sookikian, Dennis M.; and Gudea, Dumitru, 4,241,407, Cl. 364-567.000.

Guesdon, Jean-Luc: *See*—
Avrameas, Stratis; and Guesdon, Jean-Luc, 4,241,176, Cl. 435-7.000.

Guest, Ian G.: *See*—
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.

Guilino, Gunter; and Barth, Rudolf, to Optisch Werke G. Rodenstock. Progressive ophthalmic lens. 4,240,719, Cl. 351-169.000.

Gunzel, Peter: *See*—
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Gustafson, Karl A., to SCA Development Aktiebolag. Steam treating method and system. 4,240,260, Cl. 60-670.000.

Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Imaging system of discontinuous layer of migration material. 4,241,156, Cl. 430-41.000.

Habara, Hideaki: *See*—
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.

Haeder, Wolfgang, to Siemens Aktiengesellschaft. Cable fitting of shrinkable material with a permanent plastic sealing insert. 4,241,234, Cl. 174-92.000.

Hagler, James D.: *See*—
Odom, William, 4,241,326, Cl. 340-33.000.

Haglund, Mats T. Arrangement for guiding a bore-crown or bit along a given path. 4,240,512, Cl. 175-75.000.

Hagmann, Peter; and Markun, Lovro, to Oehler-Whylen-Lagertechnik AG. Vertical conveying apparatus. 4,240,529, Cl. 187-90.000.

Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., to Chicago Bridge & Iron Company. Flanged connection for pressure vessel. 4,240,561, Cl. 220-3.000.

Hahn, Guerry L.; and Baker, Gerald S., to Cameron Iron Works, Inc. Flow control apparatus. 4,240,609, Cl. 251-282.000.

Hahn, Walter: *See*—
Stolz, Robert; and Hahn, Walter, 4,240,681, Cl. 308-189.00R.

Halcon Research and Development Corp.: *See*—
Khoobiar, Sargis, 4,240,930, Cl. 252-435.000.
Wan, Chee-Gen, 4,241,219, Cl. 560-232.000.

Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., to General Foods Corporation. Gasified candy dispersed in a matrix of sorbitol. 4,241,092, Cl. 426-96.000.

Hall, Dale E., to International Nickel Co., Inc., The. Process of water electrolyis. 4,240,887, Cl. 204-129.000.

Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use for preparing smoking tobacco compositions of spiropyran derivatives. 4,240,447, Cl. 131-9.000.

Hall, John B.: *See*—
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

Hallerback, Stig L.; and Lachonius, Leif, to Aktiebolaget SKF. Feeding and mixing nozzle and method for mixing liquid resin mixtures and feeding it into molds by centrifugal force. 4,240,777, Cl. 425-130.000.

Halsey, Dave R.: *See*—
Smith, William P.; and Halsey, Dave R., 4,240,766, Cl. 404-10.000.

Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, to Fuji Photo Film Co., Ltd. Process for consecutively coating both sides of web. 4,241,111, Cl. 427-211.000.

Hamano, Yoshiteru, to Kyoto Ceramic Kabushiki Kaisha. Detection element for determining oxygen content and detector for determining oxygen content using the same. 4,240,893, Cl. 204-195.00S.

Hambor, John G.; and Bickel, James G., to Galileo Electro-Optics Corp. Series capacitor voltage multiplier circuit with top connected rectifiers. 4,241,360, Cl. 357-56.000.

Hammond, Joseph, to United States of America, Navy. Vehicle launching device. 4,240,599, Cl. 244-63.000.

Hamsag, Ernest E., to Saft-Societe des Accumulateurs Fixes et de Traction. Method for sealing a primary cell. 4,240,197, Cl. 29-623.200.

Hanaoka, Yutaka: *See*—
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.

Hanifin, John W.; and Ridge, David N., to American Cyanamid Company. β-Oxo-3-thiophenepropionitrile and β-amino-2-(3)-thiophenecrylonitriles. 4,241,077, Cl. 424-275.000.

Hanna, Samuel Y., to Centronics Data Computer Corp. Fanfold replacement ribbon package. 4,240,757, Cl. 400-196.100.

Hannah, John, to Merck & Co., Inc. Antibacterial penicillins. 4,241,062, Cl. 424-251.000.

Hannemann, Horst: *See*—
Regehr, Ulrich; Hannemann, Horst; and Speitkamp, Ludwig, 4,240,814, Cl. 55-423.000.

Hansen, Elmer K. Tool mounting assembly for soil tilling implement. 4,240,509, Cl. 172-269.000.

Hanus, Judith, to Gasser, Francois W. Erection holder. 4,240,413, Cl. 128-79.000.

Hara, Hiroshi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrates against the action of light. 4,241,154, Cl. 430-17.000.

Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrates including photographic dye images against light. 4,241,155, Cl. 430-17.000.

Harada, Shuichi: *See*—
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.

Haraguchi, Keisuke: *See*—
Nomura, Katsuhiko; and Haraguchi, Keisuke, 4,240,734, Cl. 354-173.000.

Harbison, William H.; and Mohnach, Michael G., to Anderson Company of Indiana, The. Connector for windshield wiper blade. 4,240,177, Cl. 15-250.320.

Harlow, John H., Jr.; and Maywood, Joseph, to General Motors Corporation. Powertrain and independent suspension mounting arrangement for front-wheel-drive vehicle. 4,240,517, Cl. 180-295.000.

Harmer, Alan L., to Battelle Memorial Institute. Refractive-index responsive light-signal system. 4,240,747, Cl. 356-133.000.

Harper-Wyman Company: *See*—
Huff, Norman M., 4,240,458, Cl. 137-315.000.

Harrigan, Richard V., to Niagara Envelope Co. Inc. Locking envelope. 4,240,577, Cl. 229-76.000.

Harris, Alfred W., to Boeing Company, The. Noise reducing air inlet for gas turbine engines. 4,240,250, Cl. 60-39.09D.

Harris Communications: *See*—
Pan, Jing-Jong, 4,240,694, Cl. 350-96.160.

Harris Corporation: *See*—
Doyle, Brent R., 4,240,846, Cl. 148-175.000.
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.
Held, Richard E., 4,240,327, Cl. 91-176.000.
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Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.
Patterson, Raymond B., III; and Wood, Grady M., 4,241,315, Cl. 330-261.000.
Raney, Meredith T., Jr., 4,241,340, Cl. 340-731.000.
Snell, James L.; and Cobb, Raymond F., 4,241,454, Cl. 455-260.000.

Harris, Robert F.; and Wagener, Earl H., to Dow Chemical Company, The. Novel onium surfactants. 4,240,982, Cl. 564-285.000.

Harris, Vivian G.: *See*—
Sargisson, Donald F.; and Harris, Vivian G., 4,240,252, Cl. 60-262.000.

Harry Major Machine & Tool Co.: *See*—
Wiknich, Douglas D., 4,240,542, Cl. 198-751.000.

Harvey, Richard D.: *See*—
Witt, Paul R.; and Harvey, Richard D., 4,241,183, Cl. 435-95.000.

Harvey, Vernon B. W., to Wright Rain Limited. Pipe-following irrigation machine. 4,240,461, Cl. 137-344.000.

Hasegawa, Hisashi: *See*—
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.

Hashimoto, Michiaki: *See*—
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.

Hashimoto, Yasuhiro: *See*—
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Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, to Audi NSU Auto Union AG. Window assembly for vehicles. 4,240,227, Cl. 49-348.000.

Hastings, Thomas N.: *See*—
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, to Hitachi, Ltd. Light sensitive photoresist materials. 4,241,162, Cl. 430-195.000.

Hatch, Burton D., to General Electric Company. Compliant cage for raceway-type liquid metal current collector for high-speed acyclic machines. 4,241,273, Cl. 310-219.000.

Hattori, Tadashi: *See*—
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.

Hauck, Frederic P.; and Jacobs, Glenn A., to E. R. Squibb & Sons, Inc. 6-[(Aryloxy)methyl]-2-morpholinemethanol derivatives and use thereof. 4,241,059, Cl. 424-248.580.

Hauni-Werke Korber & Co. KG: *See*—
Brand, Peter; and Helms, Adolf, 4,240,468, Cl. 137-625.330.
Heitmann, Uwe; and Buchegger, Joachim, 4,240,448, Cl. 131-21.00R.

Hausmann, Laurenz: *See*—
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.

Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., to Harris Corporation. Method and apparatus for accumulating and gating articles. 4,240,538, Cl. 198-358.000.

Hawkes, Richard B.: *See*—
Hobbs, John N.; and Hawkes, Richard B., 4,240,540, Cl. 198-492.000.

Hawks, George H., III: *See*—
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,241,163, Cl. 430-213.000.

Haydon, Arthur W.; and Dean, John J., to Tri-Tech, Inc. Synchronous electric motor. 4,241,270, Cl. 310-164.000.

Hayes, John E.: *See*—
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., 4,241,093, Cl. 426-258.000.

Hayes, Richard H.; and Herrmann, Robert W., to Eagle-Picher Industries, Inc. Circuit responsive to rate change in amplitude of analog electrical signal for use in tire processing apparatus. 4,241,300, Cl. 318-590.000.

Hazelton, Robert H.; and Kimball, John J., to American Bank Note Company. Banknote intaglio printing press. 4,240,347, Cl. 101-153.000.

Hazen, Thomas A., to American Hospital Supply Corporation. Syringe with needle and method of attaching same. 4,240,422, Cl. 128-218.00N.

Heathcote, Terence R.; and Jefferies, Ralph G., to Stothert & Pitt Limited. Hydrostatically driven road rollers. 4,240,333, Cl. 92-12.200.

Heberlein Maschinenfabrik AG: *See*—
Raschle, Josef, 4,240,248, Cl. 57-338.000.

Hedgcock, Richard L.; and Whitehurst, Gerald E., to Caterpillar Tractor Co. Geared steering means. 4,240,534, Cl. 192-13.00R.

Heese, Joachim: *See*—
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.

Heimann, Sigismund: *See*—
Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, 4,240,792, Cl. 8-607.000.

Heimer, Richard J., to Kasper Instruments, Inc. Multiple apparent source optical imaging system. 4,241,389, Cl. 362-297.000.

Heitmann, Uwe; and Buchegger, Joachim, to Hauni-Werke Korber & Co. KG. Apparatus for increasing the permeability of wrapping material for rod-shaped smokers' products. 4,240,448, Cl. 131-21.00R.

Held, Richard E., to Harris Corporation. Fluid operated linear actuator control system. 4,240,327, Cl. 91-176.000.

Helen of Troy Corporation: *See*—
Thompson, Russell L., 4,240,451, Cl. 132-42.00A.

Helfrich, Adam: *See*—
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Helgorsky, Jacques; and Leveque, Alain, to Rhone-Poulenc Industries. Liquid/liquid extraction of gallium values from basic aqueous solutions thereof. 4,241,029, Cl. 423-112.000.

Helms, Adolf: *See*—
Brand, Peter; and Helms, Adolf, 4,240,468, Cl. 137-625.330.

Hemersam, Rudolf, to Bunzl & Biach Aktiengesellschaft. Method of preparing a bituminuous binder and a construction material containing the same. 4,240,946, Cl. 260-28.5AS.

Henderson, James R.; and Lewis, Larry E., to Keycon Corporation. Vehicle securing and lockout prevention system. 4,240,516, Cl. 180-289.000.

Henderson, Rosetta M.: *See*—
Boswell, George A., Jr.; and Henderson, Rosetta M., 4,241,065, Cl. 424-260.000.

Hendrix, William T., to Sun Chemical Corporation. Treatment of textiles with modified alpha-olefins. 4,240,795, Cl. 8-115.600.

Hendy, Brian N., to Imperial Chemical Industries Limited. Antistatic polyolefin films. 4,241,144, Cl. 428-516.000.

Hennecke, Hermann: *See*—
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,240,590, Cl. 241-56.000.

Henning, Jack H. Tool box including a plurality of rotating nested pyramidal tool racks. 4,240,684, Cl. 312-.33..

Henning, William J. Aqueous insulative coating compositions containing kaolin and staple fibers. 4,240,936, Cl. 260-17.00R.

Henry, H. Clarke: *See*—
Gilbert, John B.; and Henry, H. Clarke, 4,240,900, Cl. 208-143.000.

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Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, 4,240,471, Cl. 139-114.000.

Hercules Incorporated: *See*—
Breslow, David S., 4,240,971, Cl. 260-348.430.
Dumas, David H., 4,240,935, Cl. 260-9.000.

Heritage Quilts, Inc.: *See*—
Wrightson, John C., 4,240,159, Cl. 2-243.00R.

Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Method and apparatus for placing thread in a texturing apparatus at supersonic speeds. 4,240,187, Cl. 28-255.000.

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Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.

Herring, William M.: *See*—
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.

Herrmann, Robert W.: *See*—
Hayes, Richard H.; and Herrmann, Robert W., 4,241,300, Cl. 318-590.000.

Hervig, Harold C. High voltage splice. 4,241,004, Cl. 264-262.000.

Hery, Thomas A.; and Getchen, John G., to General Atomic Company. Multiple-processor digital communication system. 4,241,330, Cl. 340-147.00R.

Herzan, Eugene H.; and Meisinger, Stanlee W., to Parker-Hannifin Corporation. Push-pull coupling. 4,240,466, Cl. 137-614.040.

Hetzel, Hartmut, to Bayer Aktiengesellschaft. Method for evaporating solvents and reacting components in compound mixtures. 4,241,043, Cl. 423-659.000.

Heytmeijer, Herman R., to Westinghouse Electric Corp. Switching devices for a flash lamp array and method. 4,240,786, Cl. 431-359.000.

Hideyuki Kimura: *See*—
Kimura, Hideyuki, 4,240,690, Cl. 350-36.000.

Higashida, Susumu: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Hilakos, William: *See*—
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, 4,240,968, Cl. 260-345.200.

Hintze, William; and Shirk, Albert, to AMP Incorporated. LED Display panel having bus conductors on flexible support. 4,241,277, Cl. 313-500.000.

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Hirata, Ken-ichi: *See*—
Takahashi, Nobuhiro; and Hirata, Ken-ichi, 4,240,616, Cl. 266-119.000.

Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture camera. 4,240,720, Cl. 352-170.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing carboxysiloxane metal salts and hydroxybenzoic acid as pH buffer and corrosion inhibitor. 4,241,011, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing amino silanes, amino siloxanes and a hydroxybenzoic acid. 4,241,012, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing aminosilicone-silicate polymers. 4,241,013, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for alkali metal silicate-containing antifreeze compositions. 4,241,014, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing organosilicone-silicate polymers. 4,241,015, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing organosiloxane-silicate copolymers. 4,241,016, Cl. 422-17.000.

Hitachi, Ltd.: *See*—
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.
Kamiya, Masanori, 4,241,361, Cl. 358-10.000.
Nakagaki, Harushige; and Inoue, Shigeki, 4,241,456, Cl. 455-603.000.
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Terashima, Isamu, 4,240,375, Cl. 118-689.000.
Yamauchi, Masaaki, 4,241,275, Cl. 313-413.000.

Hliboki, Joseph G.; and Staudenmaier, Paul, to Teaneck Graphics Corp. Vacuum frame. 4,240,743, Cl. 355-73.000.

Ho, T. L.; Din, Zia U.; and Traynor, Sean G., to SCM Corporation. Synthesis of menthofuran. 4,240,969, Cl. 260-346.220.

Hobbs, John N.; and Hawkes, Richard B., to Harris Corporation. Gating method and apparatus. 4,240,540, Cl. 198-492.000.

Hobbs, John N.: *See*—
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.

Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, to Amax Inc. Electrowinning using fluidized bed apparatus. 4,240,886, Cl. 204-112.000.

Hoechst Aktiengesellschaft: *See*—
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.
Muller-Schiedmayer, Gunther; and Aigner, Rudolf, 4,240,980, Cl. 564-153.000.
Schroter, Herbert, 4,240,736, Cl. 354-299.000.

Hoffman, Allan C. Game ball check valve. 4,240,630, Cl. 273-61.00R.

Hoffmann-La Roche Inc.: *See*—
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.
Imboden, Walter H.; and Lieberman, David M., 4,240,160, Cl. 2-239.000.
Pfiffner, Albert, 4,241,058, Cl. 424-248.400.
Smithen, Carey E., 4,241,060, Cl. 424-248.570.
Walser, Armin, 4,240,962, Cl. 260-245.600.

Hogg, James W., to Anchor Wire Corporation. Display container for coiled wire. 4,240,549, Cl. 206-303.000.

Hohulin, Samuel E.: *See*—
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.

Hokkaido University: *See*—
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.

Hokkanen, Eero. Fire extinguishing system having a dosaging cylinder for an additive. 4,240,507, Cl. 169-53.000.

Holever, Bernard K. Tracheal tube adapter for ventilating apparatus. 4,240,417, Cl. 128-203.120.

Holland, Gary M.: *See*—
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A. Method of preforming vascular grafts of human and other animal origin. 4,240,794, Cl. 8-94.110.

Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, to AGA Aktiebolag. Protective device for optical elements. 4,240,691, Cl. 350-63.000.

Holschlag, Richard C. Grain storage bin wall panel. 4,240,562, Cl. 220-5.00R.

Holt, James H., Jr.; and Newman, Morris, to Hydril Company. Blowout preventer shearing and sealing rams. 4,240,503, Cl. 166-55.000.

Holt Rogers & Co., Ltd.: *See*—
Jenkins, Brian, 4,240,400, Cl. 126-91.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,240,331, Cl. 91-434.000.

Honeywell Inc.: *See*—
Stucka, Edward P.; and Trautmann, Harald G., 4,240,335, Cl. 92-96.000.

Honeywell Information Systems Inc.: *See*—
Stanley, Philip E., 4,241,418, Cl. 364-900.000.
Trubisky, Leonard G., 4,241,446, Cl. 371-37.000.

Hong, Se June, to International Business Machines Corporation. Module interconnection testing scheme. 4,241,307, Cl. 324-73.00R.

Hooker Chemicals & Plastics Corp.: *See*—
Annis, Myron C., 4,241,201, Cl. 525-503.000.

Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, to Robert Bosch GmbH. Fuel metering device for an internal combustion engine. 4,240,383, Cl. 123-492.000.

Horikoshi, Hiroyoshi: *See*—
Baba, Yoshihiko; and Horikoshi, Hiroyoshi, 4,241,082, Cl. 424-309.000.

Horiuchi, Hideo: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Horn, James N.; and Garden, Lorne J., to Saab-Scania Aktiebolag. Movable support assembly for a board infeed system. 4,240,477, Cl. 144-245.00R.

Hornell, Ake, to ESAB Aktiebolag. Multiple layer protective glass, particularly a protective glass for a welding shield. 4,240,709, Cl. 350-335.000.

Hosono, Saburo, to Olympus Optical Co., Ltd. Device for sealing an endoscope channel. 4,240,411, Cl. 128-4.000.

Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., to Exxon Research & Engineering Co. Secondary alcohol dehydrogenase enzyme and use thereof. 4,241,184, Cl. 435-148.000.

Houdek, Merle E.: *See*—
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.
Howe, Dorothy Elizabeth: *See*—
Howe, Peter, 4,240,359, Cl. 108-53.100.
Howe, Peter, to Howe, Dorothy Elizabeth. Freight carrier. 4,240,359, Cl. 108-53.100.
Howland, Charles P.: *See*—
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.
HPM Corporation: *See*—
Flickinger, William T.; and Staiger, Donald W., 4,240,781, Cl. 425-450.100.
Hruza, Denis E., Sr.: *See*—
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Hsia, Jen C., to University of Toronto, The Governing Council of the. Assay for reserve bilirubin binding capacity. 4,240,797, Cl. 23-230.00B.
Huang, Barney K. Method and apparatus for utilizing solar energy in a water and waste management system. 4,240,210, Cl. 34-39.000.
Huang, Marshall Y.: *See*—
United States of America, National Aeronautics and Space Administration; Barnes, James R.; and Huang, Marshall Y., 4,241,312, Cl. 329-50.000.
Hubbard, Terence; and Jackson, Eric A., to Perard Engineering Limited. Conveyor mounted vehicle. 4,240,665, Cl. 299-31.000.
Huber, William R., III: *See*—
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.
Huck, Rodney M., to Monsanto Company. Accelerated resole binder. 4,240,948, Cl. 260-29.300.
Hudson Products Corporation: *See*—
Larinoff, Michael W., 4,240,502, Cl. 165-112.000.
Hudson, Sharon J., Jr., to Sharon Manufacturing Company. Method of brazing a pressure vessel with thermal release plug. 4,240,573, Cl. 228-184.000.
Huey, Douglas C.: *See*—
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.
Huff, Norman M., to Harper-Wyman Company. Excess pressure shut-off valve. 4,240,458, Cl. 137-315.000.
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, to Medical, Incorporated. Arcuate disc heart valve. 4,240,161, Cl. 3-1.500.
Hughes Aircraft Company: *See*—
Dickerson, Arthur F., 4,241,305, Cl. 324-52.000.
Griffin, Edward L.; and Young, Frederick A., 4,241,323, Cl. 333-209.000.
Hughes, Gary W., to Chemical Applicator, Inc. Low cost, highly versatile self-pumping vehicle type liquid sprayer. 4,240,583, Cl. 239-157.000.
Hughes, Henry G.; and Keller, Jed V., to Motorola, Inc. Plasma development process for photoresist. 4,241,165, Cl. 430-269.000.
Hughes, Nathaniel, to Hughes Sciences Group, Inc. Vortex generating device. 4,240,293, Cl. 73-861.220.
Hughes Sciences Group, Inc.: *See*—
Hughes, Nathaniel, 4,240,293, Cl. 73-861.220.
Hulbert, Clarence E., Jr.; Fan, Liang-Tseng; and Akinc, Mufit, to Hulbert, Clarence E., Jr. Method of making concrete from fly ash. 4,240,952, Cl. 260-42.130.
Hunkar, Denes B., to Hunkar Laboratories, Inc. Process for controlling part density in fast injection molding machines. 4,240,996, Cl. 264-40.100.
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Hunkar, Denes B., 4,240,996, Cl. 264-40.100.
Hunt, David J., to International Computers Limited. Binary adder with shifting function. 4,241,413, Cl. 364-784.000.
Hunt, Harold R.: *See*—
Kraus, Gerard; and Hunt, Harold R., 4,241,022, Cl. 422-156.000.
Hurd, William A.: *See*—
Kurtz, Robert L.; and Hurd, William A., 4,240,750, Cl. 356-394.000.
Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Breechblock for an automatic firing weapon. 4,240,325, Cl. 89-190.000.
Huseby, Irvin C., to General Electric Company. Method for minimizing the formation of a metal-ceramic layer during casting of superalloy materials. 4,240,828, Cl. 75-135.000.
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., to University of Kentucky Research Foundation, The. Derivatives of aspirin. 4,241,055, Cl. 424-180.000.
Hutchison, Joseph A., to Solar Kinetics, Inc. Solar reflector structure. 4,240,406, Cl. 126-438.000.
Hydra Sponge Co., Inc.: *See*—
Farmer, Michael J., 4,240,176, Cl. 15-121.000.
Hydril Company: *See*—
Holt, James H., Jr.; and Newman, Morris, 4,240,503, Cl. 166-55.000.
I & I Sling Company, Inc.: *See*—
St. Germain, Dennis, 4,240,659, Cl. 294-74.000.
Ibuki Kogyo Co., Ltd.: *See*—
Shintaku, Yoshishige, 4,241,334, Cl. 340-388.000.
Igloo Corporation: *See*—
Decker, Joseph A., Jr., 4,240,999, Cl. 264-46.500.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method for electrolysis of an aqueous alkali metal chloride solution. 4,240,883, Cl. 204-98.000.
Ikawa, Kazuo, to Canon Kabushiki Kaisha. Electrical power source for an electronic flash unit. 4,241,369, Cl. 361-8.000.
Ikemizu, Tokihiko: *See*—
Aoshima, Terutaka; and Ikemizu, Tokihiko, 4,241,288, Cl. 219-441.000.
Ikenishi, Masataka: *See*—
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.
Illger, Hans-Walter: *See*—
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.
Illinois Tool Works Inc.: *See*—
Nelson, John F., 4,240,282, Cl. 73-447.000.
Imboden, Walter H.; and Lieberman, David M., to Burlington Industries Inc., by said Walter H. Imboden; and Hoffmann-La Roche Inc. Cut and sewn surgical stockings. 4,240,160, Cl. 2-239.000.
Imperial Chemical Industries Limited: *See*—
Benzie, Robert J.; and Waddan, Dhafir Y., 4,240,976, Cl. 260-465.300.
Bowler, Jean, 4,241,215, Cl. 560-55.000.
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.
Hendy, Brian N., 4,241,144, Cl. 428-516.000.
Inaba, Naomi: *See*—
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.
Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko. Automatic tooling machine. 4,240,194, Cl. 29-568.000.
Inglis, Leslie R., to Vortec Corporation. Temperature-adjustable vortex tube assembly. 4,240,261, Cl. 62-5.000.
Inhofer, Harold G.; and Kriz, James J., Jr., to Proteus Corporation. Fluid pressure servo detent mechanism. 4,240,329, Cl. 91-342.000.
Inhofer, Harold G.; and De Veau, John E., to Aeration Industries, Inc. Aeration propeller and apparatus. 4,240,990, Cl. 261-87.000.
Inose, Fumiyuki: *See*—
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Inoue, Minoru: *See*—
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Inoue, Shigeki: *See*—
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Inoue, Shoichi: *See*—
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Institut Francais du Petrole: *See*—
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Institute of Gas Technology: *See*—
Ang, Peter G. P.; and Sammells, Anthony F., 4,240,882, Cl. 204-75.000.
Institutul de Stiinte Biologice—Bucharest: *See*—
Ionescu, Vicentiu L., 4,240,443, Cl. 128-734.000.
Interfarm Corporation: *See*—
Rader, Helmut, 4,240,465, Cl. 137-564.500.
Interlake, Inc.: *See*—
Kyts, Robert B., 4,240,865, Cl. 156-494.000.
International Business Machines Corporation: *See*—
Acosta, Robert G., 4,240,758, Cl. 400-279.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.
Hong, Se June, 4,241,307, Cl. 324-73.00R.
Kennedy, Eugene T.; and Janeway, Donald L., 4,241,406, Cl. 364-518.000.
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.
Wilbur, Clayton V., 4,240,714, Cl. 350-357.000.
International Computers Limited: *See*—
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International Flavors & Fragrances Inc.: *See*—
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.
International Harvester Company: *See*—
Gagliani, John, 4,241,114, Cl. 427-370.000.
Gagliani, John, 4,241,193, Cl. 521-77.000.
Gladieux, Dennis M., 4,240,654, Cl. 285-276.000.

International Minerals & Chemical Corp.: *See*—
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., 4,241,061, Cl. 424-250.000.
International Nickel Co., Inc., The: *See*—
Hall, Dale E., 4,240,887, Cl. 204-129.000.
International Standard Electric Corporation: *See*—
Viohl, Uwe; and Zondler, Rolf, 4,240,896, Cl. 204-299.00R.
International Telephone and Telegraph Corporation: *See*—
Albanese, Damian F.; and Klein, Albert M., 4,241,347, Cl. 343-9.00R.
Alonso, Oscar, 4,240,198, Cl. 29-876.000.
Epstein, Marvin A., 4,241,447, Cl. 375-1.000.
Pernyeszi, Joseph, 4,241,239, Cl. 179-70.000.
Ionescu, Vicentiu L., to Institutul de Stiinte Biologice—Bucharest. Selective preamplifier of cell potentials. 4,240,443, Cl. 128-734.000.
Ishiba, Teruyuki: *See*—
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.
Ishidoshiro, Hiroshi: *See*—
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Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, to Toyo Rubber Industry Co., Ltd., The. Flexible expansion joint. 4,240,653, Cl. 285-235.000.
Ishiguro, Toshio; and Kyotani, Minoru, to Kubota Ltd. Power-driven rotary ground working implement. 4,240,508, Cl. 172-72.000.
Ishihara Sangyo Kaisha Limited: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.
Ishiyama, Kiyoshige, to Shinko Electric Co., Ltd. Printing system for boarding pass and/or baggage tag. 4,240,862, Cl. 156-350.000.
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, to Takeda Chemical Industries, Ltd. Antibiotic compositions. 4,241,057, Cl. 424-246.000.
Iskander, Magdy F.; and Durney, Carl H., to University of Utah. Electromagnetic energy coupler/receiver apparatus and method. 4,240,445, Cl. 128-804.000.
Iso, Tadashi: *See*—
Iwao, Jun-ichi; and Iso, Tadashi, 4,241,086, Cl. 424-319.000.
Isogai, Yasuhiro: *See*—
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Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, to Mitsui Petrochemical Industries, Ltd. Process for producing terephthalic acid. 4,241,220, Cl. 562-414.000.
Itek Corporation: *See*—
Dodge, Dennis, 4,240,730, Cl. 354-90.000.
Wetherell, William B.; and Womble, David A., 4,240,707, Cl. 350-294.000.
Itoh, Teruo: *See*—
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
ITT Industries, Inc.: *See*—
Botz, Jakob; Mutschler, Erich; and Weber, Adam, 4,241,260, Cl. 307-10.0LS.
Postema, Pieter M., 4,240,531, Cl. 188-315.000.
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., to International Minerals & Chemical Corp. Oxazolidinyl-quinoxalines and use as growth promoters. 4,241,061, Cl. 424-250.000.
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J. H. Benecke GmbH: *See*—
Boich, Heinz-Horst, 4,240,416, Cl. 128-156.000.
J. M. Huber Corporation: *See*—
Lamond, Trevor G.; and Cuthbertson, Charles R., 4,241,001, Cl. 264-117.000.
J-Tec Associates, Inc.: *See*—
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.
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Derbyshire, George C., 4,240,771, Cl. 408-124.000.
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Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
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Hauck, Frederic P.; and Jacobs, Glenn A., 4,241,059, Cl. 424-248.580.
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Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.
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Klapp, Hartmut, 4,240,539, Cl. 198-461.000.
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Volpenhein, Robert A.; and Jandacek, Ronald J., 4,241,054, Cl. 424-180.000.
Jandourek, Emil, to Sybron Corporation. Dental pulp capping and cavity lining composition and preparative method. 4,240,832, Cl. 106-35.000.
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Kennedy, Eugene T.; and Janeway, Donald L., 4,241,406, Cl. 364-518.000.
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Edwards, Robert B.; and Jayne, Theodore D., 4,240,492, Cl. 164-34.000.
Jean, San-Bau. Elastic base toothbrush. 4,240,452, Cl. 132-84.00R.
Jefferies, Ralph G.: *See*—
Heathcote, Terence R.; and Jefferies, Ralph G., 4,240,333, Cl. 92-12.200.
Jenkins, Brian, to Holt Rogers & Co., Ltd. Space heater. 4,240,400, Cl. 126-91.00R.
Jex, Edward R. Extrusion technique with ram speed control. 4,240,997, Cl. 264-40.500.
JH Industries, Inc.: *See*—
Johnson, Dwight N., 4,240,606, Cl. 251-127.000.
Jiffy Manufacturing Company, Inc.: *See*—
Bell, Harris N.; and Morton, Alexander R., 4,240,593, Cl. 242-71.800.
Joanell Laboratories, Inc.: *See*—
LaMura, Joseph L., 4,240,640, Cl. 273-373.000.
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., to Bell Telephone Laboratories, Incorporated. Compact microwave filter with dielectric resonator. 4,241,322, Cl. 333-202.000.
Johnson, Bruce K., to Bell Telephone Laboratories, Incorporated. Zone focusing optical system. 4,240,724, Cl. 354-197.000.
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Johnson, David A.: *See*—
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Johnson, John L.; and Moberly, Lawrence E., to Westinghouse Electric Corp. Solid brush current collection system. 4,241,271, Cl. 310-219.000.
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Rega, John F., 4,240,866, Cl. 156-496.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., to Bell Telephone Laboratories, Incorporated. Electro-optical device based on electroplating action. 4,240,693, Cl. 350-96.140.
Johnson, Leo F., to Bell Telephone Laboratories, Incorporated. Technique for altering the profile of grating relief patterns. 4,241,109, Cl. 427-162.000.
Johnson, Robert M. Flexible saw. 4,240,203, Cl. 30-166.00R.
Johnson, Roy A., to Upjohn Company, The. 9-Deoxy-5,9α-epoxy-4,5-cis-17,18-tetradehydro-PGF$_1$ amides. 4,241,205, Cl. 542-420.000.
Johnson, William B. Fluidized-bed compact boiler and method of operation. 4,240,377, Cl. 122-4.00D.
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Lobanoff, Valenteen S., 4,240,762, Cl. 403-24.000.
Jones, Charles H., to United States of America, Navy. Sonar ranging system. 4,241,431, Cl. 367-123.000.
Jones, Eugene R.: *See*—
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.

Jones, Marvin E.: *See*—
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.
Jordan, Alfons: *See*—
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.
Josef Martin Feuerungsbau GmbH.: *See*—
Martin, Johannes J.; and Martin, Walter J., 4,240,402, Cl. 126-152.00B.
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Kolodziej, Robert M., 4,240,296, Cl. 73-650.000.
Mahyera, Anil; and Duff, John, 4,240,664, Cl. 299-17.000.
Rollins, Lester G., 4,240,669, Cl. 299-86.000.
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., to J-Tec Associates, Inc. Method and apparatus for determining fluid density and mass flow. 4,240,299, Cl. 73-861.230.
Judin, Valentin D.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Jung, Alfred K.: *See*—
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.
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Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.
Jurasek, Stanley J., to Eagle-Picher Industries, Inc. Collapsible material handling container. 4,240,555, Cl. 206-511.000.
Kabel- und Metallwerke Gutehoffnungshuette AG: *See*—
Rohner, Peter, 4,240,500, Cl. 165-105.000.
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Arntz, Hans-Joachim, 4,240,850, Cl. 156-78.000.
Kable Tapes Ltd.: *See*—
O'Connor, Lawrence, 4,241,121, Cl. 428-77.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.
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Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.
Kabushiki Kaisha Naka Gijutsu Kenkyusho: *See*—
Naka, Hiromitsu, 4,240,521, Cl. 182-84.000.
Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,240,348, Cl. 101-295.000.
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Ashida, Itaru, 4,241,437, Cl. 368-134.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Ushiyama, Yoshito, 4,241,339, Cl. 340-702.000.
Kabutomori, Masuo: *See*—
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Kadi-Ogly, Ibragim A.: *See*—
Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I., 4,241,269, Cl. 310-61.000.
Kahle, Donald P.: *See*—
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Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,241,103, Cl. 427-103.000.
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., to Engelhard Minerals & Chemicals Corporation. Clay pigment for coating paper. 4,241,142, Cl. 428-511.000.
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Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, 4,240,691, Cl. 350-63.000.
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Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Kals, Walter, to Niagara Blower Company. Balanced waste heat recovery and dissipation system. 4,240,499, Cl. 165-1.000.
Kamath, Venkatesh: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.
Kaminaka, Nobuyuki: *See*—
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.
Kaminski, David G.: *See*—
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.
Kamiya, Masanori, to Hitachi, Ltd. Tuning voltage display device for a color television receiver with an electronic tuner. 4,241,361, Cl. 358-10.000.
Kamiyama, Kazuaki: *See*—
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
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Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.
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Kanebo, Ltd.: *See*—
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kangas, Kayo; Mouland, John; and Timler, Stan, to Texasgulf Inc. Process for the recovery of arsenic as a zinc arsenate and its utilization in the purification of zinc plant electrolytes. 4,240,826, Cl. 75-109.000.
Kaniecki, Thaddeus J., to Stauffer Chemical Company. Liquid cleaning concentrate. 4,240,921, Cl. 252-156.000.
Kano, Toshiji: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.
Kao, Huey-Chuen I.: *See*—
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.
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Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, 4,240,350, Cl. 102-215.000.
Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl, Jr., 4,240,179, Cl. 16-139.000.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Fiedler, Hans, 4,240,275, Cl. 66-203.000.
Karnick, Hartmut, to Anschutz & Co., G.m.b.H. Gyroscopic instrument. 4,240,302, Cl. 74-5.460.
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, to Bergwerksverband GmbH. Reactor for the continuous thermal treatment of solids, particularly carbonaceous adsorbents and process of operating the same. 4,240,927, Cl. 252-411.00R.
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, to Fujitsu Limited. Electromechanical filter. 4,241,321, Cl. 333-198.000.
Kasper Instruments, Inc.: *See*—
Heimer, Richard J., 4,241,389, Cl. 362-297.000.
Kastening, Bertel: *See*—
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.
Katagiri, Masayoshi: *See*—
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.
Katayama, Nobuaki; and Koga, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil flow control device for power transmissions. 4,240,524, Cl. 184-6.120.
Katayama, Yuzo: *See*—
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.
Kate Models Pty., Limited: *See*—
Pfuhl, Jakob, 4,240,367, Cl. 112-148.000.
Kato, Hiroshi: *See*—
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Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
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Katoh, Hidehiko: *See*—
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Katscher, Werner, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Nuclear energy plant with collecting container for melting core masses. 4,240,875, Cl. 176-38.000.
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Analgesic benzomorphan derivatives. 4,241,070, Cl. 424-267.000.
Katsube, Yoshio: *See*—
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., to Marvin Glass & Associates. Toy vehicle. 4,240,224, Cl. 46-88.000.
Kavanau, Lawrence: *See*—
Knapp, Richard P., 4,241,316, Cl. 330-277.000.
Kawabe, Yasumasa: *See*—
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Kawai, Hisasi: *See*—
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Kawashima, Junichi: *See*—
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Kayem, Douglas J.; and Reed, Harold L., to Kayem, Douglas J. Method and apparatus for determining the length of tubular members. 4,241,430, Cl. 367-115.000.

Keever, Charles W., Jr., to Mace, Robert; and Mace, Mike, part interest to each. Dish drying apparatus. 4,240,211, Cl. 34-90.000.

Kellberg, Elsa R.: *See*—
Flanigen, Edith; and Kellberg, Elsa R., 4,241,036, Cl. 423-328.000.

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Kempke, William G.: *See*—
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Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.
Temin, Samuel C., 4,241,115, Cl. 427-384.000.

Kendall, Roger V.: *See*—
Diehl, Robert E.; and Kendall, Roger V., 4,240,822, Cl. 71-92.000.

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Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, to BASF Aktiengesellschaft. Manufacture of styrene suspension polymers. 4,241,191, Cl. 521-56.000.

Kern, Eckhard, to VDO Adolf Schindling AG. Device for adjustment of electrical clocks. 4,241,438, Cl. 368-185.000.

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Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., 4,241,108, Cl. 427-162.000.

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Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.
Katscher, Werner, 4,240,875, Cl. 176-38.000.

Kernick, Andress: *See*—
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Kerr, Leo A., to Bendix Corporation, The. Delay line digital code detector. 4,241,310, Cl. 328-119.000.

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Bowerman, Paul D.; and Lucid, Michael F., 4,241,027, Cl. 423-10.000.

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Kooi, J. Peter E., 4,240,689, Cl. 350-10.000.

Keycon Corporation: *See*—
Henderson, James R.; and Lewis, Larry E., 4,240,516, Cl. 180-289.000.

Keyes, Melvin H.; and Moore, Garry L., to Owens-Illinois, Inc. Enzymatic method for determining surfactants on surfaces. 4,241,180, Cl. 435-20.000.

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Chiariello, Ned A., 4,240,603, Cl. 248-125.000.

Khalil, Hassan H., to United States of America, Navy. Carotid thermodilution catheter. 4,240,441, Cl. 128-692.000.

Khoobiar, Sargis, to Halcon Research and Development Corp. Catalyst and process for producing methacrylic acid. 4,240,930, Cl. 252-435.000.

Khromov, Alexei M.: *See*—
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Kibayashi, Tamotsu: *See*—
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Kibun Co., Ltd.: *See*—
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.

Kiefer, George E., to General Electric Company. Microprocessor based control circuit for washing appliances. 4,241,400, Cl. 364-400.000.

Kiehs, Karl: *See*—
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.

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Iwama, Akio; Kihara, Yasuo; and Abe, Masao, 4,240,914, Cl. 210-500.200.

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Kim, Yung D., to Abbott Laboratories. Method of diagnosing cancer by detecting elevated anti-T antibody activity. 4,241,044, Cl. 424-1.000.

Kimball, John J.: *See*—
Hazelton, Robert H.; and Kimball, John J., 4,240,347, Cl. 101-153.000.

Kimberly-Clark Corporation: *See*—
Kronzer, Frank J., 4,240,807, Cl. 51-295.000.

Kimura, Hideyuki, to Hideyuki Kimura; and Tokyo Bussan Kabushiki Kaisha. Sliding finger plate focus adjusting device for a binocular. 4,240,690, Cl. 350-36.000.

Kimura, Shuichi, to Sony Corporation. Record player. 4,240,641, Cl 274-23.00R.

Kinard, Richard D.: *See*—
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.

King, Josef, to Gebruder Junghans GmbH. Battery-containing crown for wristwatches. 4,241,440, Cl. 368-204.000.

King, Michael J., to Oliver Tire and Rubber Company. Method for recapping solid tires with precured, premolded tread. 4,240,851, Cl. 156-96.000.

Kiploks, Elmars M.: *See*—
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Kirby, Gordon W.: *See*—
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
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Kirkwood, Robert W. Vehicle hydraulic drive system. 4,240,515, Cl. 180-165.000.

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Ford, Alan A., 4,240,490, Cl. 160-133.000.

Kishimoto, Kazuo: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Kister, Horst, to VDO Adolf Schindling AG. Arrangement for time-division multiplex PWM data transmission. 4,241,444, Cl. 370-85.000.

Kitamoto, Tatsuji: *See*—
Tadokoro, Eiichi; and Kitamoto, Tatsuji, 4,241,368, Cl. 360-128.000.

Kitamura, Takashi: *See*—
Masaki, Katsumi; and Kitamura, Takashi, 4,241,415, Cl. 364-900.000.

Kiwala, Jacob: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Klapp, Hartmut, to Jagen-Werke AG. Backup station for a carton filling machine. 4,240,539, Cl. 198-461.000.

Klar, Erhard: *See*—
Moskowitz, Larry N.; and Klar, Erhard, 4,240,824, Cl. 75-0.50C.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,240,831, Cl. 75-228.000.

Klee, Rudolf: *See*—
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.

Klein, Albert M.: *See*—
Albanese, Damian F.; and Klein, Albert M., 4,241,347, Cl. 343-9.00R.

Klimov, Nikolai E.: *See*—
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Klinger, Ludwig: *See*—
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.

Klink, Rainer, to Deutsch Automobilgesellschaft mbH. Disconnectable gas-tight and pressure-resistant electrical lead-out. 4,241,152, Cl. 429-181.000.

Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, to Hoechst Aktiengesellschaft. Photopolymerizable composition comprising a monoazo dye as contrast colorant. 4,241,166, Cl. 430-281.000.

Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., to BBC Brown, Boveri & Company, Limited. Electro-optical device for the display of dark symbols composed of separately selectable display segments against a bright background and a means for addressing this device. 4,241,344, Cl. 340-765.000.

Kmetz, Gerald L., to National Semiconductor Corporation. Electronic musical instrument. 4,240,317, Cl. 84-1.010.

Knapp, Richard P., to Kavanau, Lawrence, a part interest. Field effect transconductance amplifiers. 4,241,316, Cl. 330-277.000.

Knox, Jack R., to Standard Oil Company (Indiana). Process for producing homogeneous curly synthetic polymer fibers. 4,241,002, Cl. 264-168.000.

Kobayashi, Morio: *See*—
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Kobayashi, Naotake, to Sony Corporation. Releasing agent. 4,241,198, Cl. 525-360.000.

Kobayashi, Takashi: *See*—
Tsuchibuchi, Akira; and Kobayashi, Takashi, 4,240,880, Cl. 204-15.000.

Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., to Reckitt & Colman Products Limited. 14-Amino derivatives of morphine, methods of making them and analgesic compositions containing them. 4,241,066, Cl. 424-260.000.

Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., to Reckitt & Colman Products Limited. 14-Amino derivatives of morphine, methods of making them and analgesic compositions containing them. 4,241,067, Cl. 424-260.000.

Koda, Minoru; and Muya, Tsuneo, to Matsushita Electric Industrial Co., Ltd. Magnetic video recording and reproducing device. 4,241,365, Cl. 360-73.000.

Koehring GmbH - Bomag Division: *See*—
Carle, Udo, 4,240,326, Cl. 91-39.000.

Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, to BASF Aktiengesellschaft. 2-(O-Hydroxyphenyl)-pyrrole and process for its preparation. 4,240,964, Cl. 260-326.50M.

Koenig, Karl-Heinz: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.

Koester, Charles J. Scanning microscopic apparatus. 4,241,257, Cl. 250-235.000.

Koga, Hideaki: *See—*
Katayama, Nobuaki; and Koga, Hideaki, 4,240,524, Cl. 184-6.120.

Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, to Dowa Mining Co. Ltd. Method of removal of arsenic from a sulfuric acid solution. 4,241,039, Cl. 423-531.000.

Kohashi, Takahiro: *See—*
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.

Koike, Haruhiko: *See—*
Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko, 4,240,194, Cl. 29-568.000.

Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, to Bridgestone Tire Co., Ltd. Pneumatic tire for large size and high speed motor cycles two-wheeled vehicles. 4,240,484, Cl. 152-209.00R.

Kojima, Masaharu, to Nifco Inc. Plastic screw socket. 4,240,323, Cl. 85-80.000.

Kok, Riekert, to Shell Oil Company. Process for the preparation of 1,2-dioximes. 4,240,981, Cl. 564-259.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Sakaki, Hiroshi; and Shintani, Sotokichi, 4,241,443, Cl. 370-70.000.

Kolberg, Reiner: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Kolich, Charles H., to Ethyl Corporation. Process for purifying cyclic phosphonitrilic chlorides. 4,241,034, Cl. 423-300.000.

Kolodziej, Robert M., to Joy Manufacturing Company. Measurement of torsional acceleration of a rotating body. 4,240,296, Cl. 73-650.000.

Komabashiri, Takamichi: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Komarnicki, Gene. Strike light fishing rod holder. 4,240,221, Cl. 43-17.000.

Komarov, Mark M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Komatsu, Toshiyuki: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for keeping aquatic animals alive over long periods of time. 4,240,376, Cl. 119-2.000.

Komiya, Osamu, to Olympus Optical Co., Ltd. Laser knife. 4,240,431, Cl. 128-303.100.

Kondo, Kenji: *See—*
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.

Kondo, Shigeki, to Tokyo Juki Kogyo Kabushiki Kaisha. Method for fulling fabric. 4,240,185, Cl. 26-19.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Kono, Tatsuhiko: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Kooi, J. Peter E., to Keuffel & Esser Company. Telescope reticle adjusting means. 4,240,689, Cl. 350-10.000.

Korovainy, Sergei F.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Korytko, Myron I., to Efco, Inc. System for providing for parallelism in fluid powered press or the like. 4,240,778, Cl. 425-149.000.

Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A. Method for applying polymer coating composition. 4,241,112, Cl. 427-213.000.

Kostenbauder, Harry B.: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,241,055, Cl. 424-180.000.

Kostic, Sam. Wood finishing composition. 4,240,939, Cl. 260-22.0TN.

Kotyk, Jeffrey M.: *See—*
Wegmann, Jerome B.; and Kotyk, Jeffrey M., 4,240,328, Cl. 91-287.000.

Kotzin, Garvin S. Audio-visual display device. 4,240,218, Cl. 40-407.000.

Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, to Canon Kabushiki Kaisha. Electrostatic copying apparatus. 4,240,739, Cl. 355-3.00R.

Kovacs, Andre L. Heat exchanger with juxtaposed elements. 4,240,501, Cl. 165-165.000.

Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, to Sharp Kabushiki Kaisha. Holding plate for a twisted nematic alignment field effect mode (TNFEM) liquid crystal display. 4,240,710, Cl. 350-339.00R.

Kozhirova, Svetlana E.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Kozin, Leonid F.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Kraayeveld, Jan W.: *See—*
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.

Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, to Hoechst Aktiengesellschaft. Water-soluble reactive polymer mixture. 4,240,938, Cl. 260-18.0EP.

Krapukhin, Viktor M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Krasner, Norman F.; and Leiner, Barry M., to Probe Systems, Incorporated. FFT Parallel processor having mutually connected, multiple identical cards. 4,241,411, Cl. 364-726.000.

Kraus, Gerard; and Hunt, Harold R., to Phillips Petroleum Company. Carbon black for low-hysteresis rubber compositions. 4,241,022, Cl. 422-156.000.

Kraus, Hans, to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft. Field sensor. 4,240,528, Cl. 187-52.00R.

Krebs, Jacqueline B.: *See—*
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., 4,241,087, Cl. 424-324.000.

Kreick, John R.; and Anderson, Glenn A., Sr., to Sanders Associates, Inc. Resistive heater. 4,241,292, Cl. 219-541.000.

Krein, Reuben J., to Coachmen Industries, Inc. Method of stuffing compressible products into flexible covers. 4,240,193, Cl. 29-451.000.

Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, to Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler. Inner shoe material such as insoles and middle sole material in the form of breadths or blanks therefrom. 4,241,124, Cl. 428-156.000.

Kressel, Henry: *See—*
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.

Kresteva, Kalinka I.: *See—*
Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.

Krieg, Manfred: *See—*
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.

Kriesel, Marshall S.: *See—*
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, 4,240,161, Cl. 3-1.500.

Kriz, James J., Jr.: *See—*
Inhofer, Harold G.; and Kriz, James J., Jr., 4,240,329, Cl. 91-342.000.

Krjuchkov, Igor B.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Kroenke, William J., to B. F. Goodrich Company, The. Octadecylammonium alpha-octamolybdate and composition containing same. 4,240,955, Cl. 260-45.75R.

Kronies, Reinhard K., to Burroughs Corporation. Asynchronous digital data transmission system. 4,241,419, Cl. 364-900.000.

Kronzer, Frank J., to Kimberly-Clark Corporation. Substrate having a thermoplastic binder coating for use in fabricating abrasive sheets and abrasive sheets manufactured therewith. 4,240,807, Cl. 51-295.000.

Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, to Uni-Cardan AG. Bearing assembly for a motor vehicle wheel. 4,240,680, Cl. 308-187.100.

Krueger, Gordon P.: *See—*
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.

Kruger, Hans: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Kruglov, Gennady A.: *See—*
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V., 4,240,249, Cl. 368-28.000.

Krutki, Marian: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M. Method for centrifugal casting of tubular metal blanks. 4,240,494, Cl. 164-66.000.

Ku, Joseph P.; and Trezise, Richard D. Optimized wire matrix impact print head. 4,240,756, Cl. 400-124.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Toy timing device with a slip-stick escapement-like mechanism. 4,240,525, Cl. 185-38.000.

Kubota Ltd.: *See—*
Ishiguro, Toshio; and Kyotani, Minoru, 4,240,508, Cl. 172-72.000.

Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, to TDK Electronics Co., Ltd.; and Tokyo Magnetic Printing Co., Ltd. Magnetic recording medium. 4,241,139, Cl. 428-413.000.

Kuczkowski, Joseph A., to Goodyear Tire & Rubber Company, The. Antioxidant combination of esters and amines. 4,241,217, Cl. 560-152.000.

Kudinova, Olga I.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Kudo, Tomomichi: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Multiple copy electrophotographic reproducing method. 4,241,160, Cl. 430-124.000.

Kulikov, Evgeny V.: *See—*
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V., 4,240,249, Cl. 368-28.000.

Kulke, Gunter, to Robert Bosch GmbH. Injection valve for internal combustion engines. 4,240,385, Cl. 123-470.000.

Kurbikoff, Peter A., to General Signal Corporation. Triplex receptacle. 4,240,686, Cl. 339-14.00R.

Kurfman, Virgil B.: *See—*
Marton, Henry J.; and Kurfman, Virgil B., 4,241,129, Cl. 428-216.000.

Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, to Nippon Telegraph and Telephone Public Corporation. Polymer optical circuit with optical lead-fibers and method of fabricating the same. 4,240,849, Cl. 156-73.200.

Kuroki, Tomio: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Kurtz, Robert L.; and Hurd, William A. Automatic circuit board tester. 4,240,750, Cl. 356-394.000.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Kushibe, Kazuyoshi: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Kushida, Shozo: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Kwitkowski, Peter A., to Motorola, Inc. High sensitivity dual function meter circuit. 4,241,448, Cl. 455-115.000.

Kyogoku, Hiroshi, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Selective drum printer with axially divided multicolor ink roller. 4,240,345, Cl. 101-103.000.

Kyotani, Minoru: *See—*
Ishiguro, Toshio; and Kyotani, Minoru, 4,240,508, Cl. 172-72.000.

Kyoto Ceramic Co., Ltd.: *See—*
Machida, Hisashi; and Yoshihara, Yoichiro, 4,240,834, Cl. 106-42.000.

Kyoto Ceramic Kabushiki Kaisha: *See—*
Hamano, Yoshiteru, 4,240,893, Cl. 204-195.00S.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Kyrias, George. Spa installation. 4,240,165, Cl. 4-493.000.

Kyts, Robert B., to Interlake, Inc. Apparatus and method for applying plastic strap. 4,240,865, Cl. 156-494.000.

Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, to BASF Aktiengesellschaft. Preparation of indolenines. 4,240,963, Cl. 260-319.100.

Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., to Temple University. Canal clathrate complex solid electrolyte cell. 4,241,149, Cl. 429-50.000.

Lachonius, Leif: *See—*
Hallerback, Stig L.; and Lachonius, Leif, 4,240,777, Cl. 425-130.000.

Ladusaw, William T., to General Electric Company. Hermetically sealed compressor suction tube and method of assembly. 4,240,774, Cl. 418-248.000.

Lagasse, Alain; and Papillon, Bernard, to Rhone-Poulenc Industries. Anti-soiling and anti-redeposition adjuvants and detergent compositions comprised thereof. 4,240,918, Cl. 252-95.000.

LaGrone, Janet L.; and Spector, George. Hi rise escape tunnels and slide. 4,240,520, Cl. 182-48.000.

Lai, John T., to B. F. Goodrich Company, The. Synthesis of 2-piperazinones and 1,4-diaza-2-keto-cycloheptanes. 4,240,961, Cl. 260-239.30R.

Laird, Christopher B., to Geosource Inc. Apparatus for indicating unauthorized delivery of a fluid product. 4,241,354, Cl. 346-43.000.

Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Pneumatic rubber tire having improved sidewalls. 4,240,487, Cl. 152-355.000.

Lambert, Lloyd J., Jr. Abdominal waist machine. 4,240,626, Cl. 272-118.000.

Lamlee, Stewart. Method of making a hexaflexagon. 4,240,858, Cl. 156-211.000.

Lamond, Trevor G.; and Cuthbertson, Charles R., to J. M. Huber Corporation. Process for producing pelletized pigmentary materials. 4,241,001, Cl. 264-117.000.

LaMura, Joseph L., to Joanell Laboratories, Inc. Projectile penetration responsive electrically shorting target. 4,240,640, Cl. 273-373.000.

Landis, Earl M.; Roberts, Webster C.; and Crum, James N., to Harris Corporation. Web printing press. 4,240,346, Cl. 101-139.000.

Lang, Karl, to Mettler Instrumente AG. Apparatus with exchangeable burettes. 4,241,018, Cl. 422-75.000.

Langdon, Roger M., to Marconi Company Limited, The. Measurement of the density of liquids. 4,240,285, Cl. 73-32.00A.

Langmann, Horst: *See—*
Sanders, Heinz; and Langmann, Horst, 4,240,360, Cl. 108-53.300.

Larinoff, Michael W., to Hudson Products Corporation. Condensing heat exchanger. 4,240,502, Cl. 165-112.000.

Larka, Knut I.: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.

Larson, Lynn D. Method of making a water bed mattress. 4,240,859, Cl. 156-245.000.

Lary, Richard F.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Lash, Charles C. Foldable linear explosive charge. 4,240,349, Cl. 102-24.00R.

Laskin, Allen I.: *See—*
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.

Laskow, William; and Morelock, Charles R., to General Electric Company. Method of making a shaped silicon carbide-silicon matrix composite and articles made thereby. 4,240,835, Cl. 106-44.000.

Lather, Dieter; and Ries, Karl, to Mannesmann Aktiengesellschaft. Automatic self-checking of test equipment. 4,240,281, Cl. 73-1.0DV.

Lau, Peter: *See—*
Stelzner, Herbert A.; and Lau, Peter, 4,240,239, Cl. 53-398.000.

Lautenschlager, Friedrich W.; and Hennecke, Hermann, to Deutsche Babcock Aktiengesellschaft. Blower beater mill. 4,240,590, Cl. 241-56.000.

Lautenschlager, Karl, Jr., to Karl Lautenschlager KG, Mobelbeschlagfabrik. Hinge for cabinet doors. 4,240,179, Cl. 16-139.000.

Lawrence, James E., Jr.: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.

Lawson, Leslie E., to Vickers Limited. Processing of radiation sensitive devices. 4,240,737, Cl. 354-299.000.

Lay, Joachim E. Rotary engine. 4,240,394, Cl. 123-214.000.

Layton, Terry N.: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Lazareff, Michel: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.

Leading Plywood Corporation: *See—*
Crawford, John H., 4,240,785, Cl. 431-352.000.

Lechevin, Jean-Claude; and Treilles, Jean-Noel, to Lipha, Lyonnaise Industrielle Pharmaceutique. Novel medicinal composition for the treatment of biliary lithiasis. 4,241,047, Cl. 424-33.000.

Lechner, Uwe: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

LeCourt, William N.: *See—*
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.

Leder, Frederic: *See—*
Sartori, Guido; and Leder, Frederic, 4,240,923, Cl. 252-189.000.

Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., to General Electric Company. Polycrystalline diamond body/silicon carbide substrate composite. 4,241,135, Cl. 428-332.000.

Lee, Pang K., to Westinghouse Electric Corp. Method for making sintered metal-coated graphite for high-current collector brushes. 4,240,830, Cl. 75-212.000.

Lefevre, Lloyd E.; and Wegenka, Mark A., to Dow Chemical Company, The. Starting tail for film rolls. 4,241,127, Cl. 428-177.000.

Lehman-H Feeder & Plow, Inc.: *See—*
Martel, Virgil L., 4,240,216, Cl. 37-98.000.

Lehman, Ralph M.: *See—*
Adams, Frederick J.; and Lehman, Ralph M., 4,240,306, Cl. 74-498.000.

Lehmann, Kjeld; and Rasmussen, Arne V. R., to Danfoss A/S. Housing for an electric circuit arrangement. 4,241,380, Cl. 361-383.000.

Leibowitz, Marshall, to Timex Corporation. Electrode barrier layer for hydrogen-colored electrochromic displays. 4,240,713, Cl. 350-357.000.

Leifeld, Ferdinand; and Marx, Jurgen, to Trutzschler GmbH & Co. KG. Arrangement for opening textile fiber bales. 4,240,182, Cl. 19-81.000.

Leiner, Barry M.: *See—*
Krasner, Norman F.; and Leiner, Barry M., 4,241,411, Cl. 364-726.000.

Lennartson, Douglas G., to Gross-Given Manufacturing Company. Auxiliary dispensing unit for spiral vendor. 4,240,563, Cl. 221-75.000.

Leonard, Henri, to Micro-Mega S.A. Insert for injecting a liquid product into a bore. 4,240,473, Cl. 141-91.000.

Leopold, Leo. Folding liner for shirts and similar packaged garments. 4,240,553, Cl. 206-492.000.

Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, to AGFA-Gevaert, A.G. Focussing system. 4,240,727, Cl. 354-25.000.

Le Roy, Patrice M.: *See—*
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,241,202, Cl. 526-73.000.

Les Applications Hydrauliques R. Sarrazin S.A.: *See—*
Benilan, Jacques, 4,240,255, Cl. 60-453.000.

Letsch, Walter. Method for recycling tires and similarly compounded materials to recover usable constituents. 4,240,587, Cl. 241-23.000.

Leveque, Alain: *See—*
Helgorsky, Jacques; and Leveque, Alain, 4,241,029, Cl. 423-112.000.

Levine, James L.: *See—*
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.

Levine, Stella R., to Brewster Laboratories, Inc. Foam scrubbing device incorporating a cleanser. 4,240,760, Cl. 401-201.000.

Lewis, Dyfed: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.

Lewis, George K.: *See—*
Groch, Mark W.; and Lewis, George K., 4,240,440, Cl. 128-654.000.

Lewis, John W.: *See—*
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.

Lewis, Larry E.: *See—*
Henderson, James R.; and Lewis, Larry E., 4,240,516, Cl. 180-289.000.

Lewis, Milburn. Pressure-operated friction locking apparatus for slidably adjustable truck trailer coupling. 4,240,647, Cl. 280-482.000.

Lichter, Seymour; and Nold, Frank P. Process for the production of composite foamed material. 4,240,998, Cl. 264-45.400.

Lichter, Seymour; and Nold, Frank P. Composite foamed material. 4,241,190, Cl. 521-54.000.

Lieberman, David M.: *See—*
Imboden, Walter H.; and Lieberman, David M., 4,240,160, Cl. 2-239.000.

Life Savers, Inc.: *See—*
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.

Liffick, Fenton A.: *See—*
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.

Ligon, Samuel B.: *See—*
Song, Jae M.; and Ligon, Samuel B., 4,240,629, Cl. 273-58.00C.

Lile, Derek L.: *See—*
Collins, David A.; and Lile, Derek L., 4,241,167, Cl. 430-314.000.

Lilly Industries Limited: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Lin, Victor J., to Celanese Corporation. Spray spinning collection unit. 4,240,864, Cl. 156-441.000.

Lind, John H., to Polypur Forsaljnings AB. Device in a toilet for biological degradation of excrement. 4,240,164, Cl. 4-449.000.

Linden, James C.: *See—*
Stein, Brooks M.; and Linden, James C., 4,241,185, Cl. 435-188.000.

Linder, Peter J. Gate locking device. 4,240,278, Cl. 70-101.000.

Lindmayer, Joseph, to Solarex Corporation. Solar cell having contacts and antireflective coating. 4,240,842, Cl. 136-256.000.

Lindop, Arthur H. Cleaning device for cooker grills. 4,240,398, Cl. 126-25.00R.

Lindsay Manufacturing Company: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, to BASF Aktiengesellschaft. N-Cyclohexyl-N-methoxyacetoacetamide. 4,240,973, Cl. 260-453.0RW.

Linlor, William I. Solenoidal fusion system. 4,240,873, Cl. 176-3.000.

Linnecke, Carl B.; and Wong, Daniel, to Akzona Incorporated. Method and apparatus for specific binding substances. 4,240,751, Cl. 356-409.000.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Lechevin, Jean-Claude; and Treilles, Jean-Noel, 4,241,047, Cl. 424-33.000.

Litman, Alan, to Smith & Wesson Chemical Company, Inc. Flexible leaf contact system for night vision optical instruments. 4,241,252, Cl. 250-213.0VT.

Little, Julian R.; Nudenberg, Walter; and Rim, Yong S. Fire retardant sulfonate compound. 4,240,974, Cl. 260-456.00P.

Liu, Cheng-Yih: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Lobanoff, Valenteen S., to Johnston Pump Company. Seal-aligning rigid coupling assembly. 4,240,762, Cl. 403-24.000.

Lobe, Hartwig; and Dietz, Wolfgang, to Bayerische Motoren Werke Aktiengesellschaft. Circuit arrangement for turn-indicator blinker lights. 4,241,328, Cl. 340-75.000.

Locher, Hermann, to Giroflex Entwicklungs AG. Adjustable stacking chair. 4,240,663, Cl. 297-239.000.

Login, Robert B.: *See—*
Newkirk, David D.; and Login, Robert B., 4,241,224, Cl. 568-619.000.

LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance: *See—*
Roy, Michel, 4,240,340, Cl. 100-7.000.

Lommel, Hermann: *See—*
Bruck, Gernot K., 4,240,753, Cl. 356-442.000.

Lonseal Corporation: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

L'Oreal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.

Louden, Samuel, to National Tube & Reel Corporation. End cap for cloth reel. 4,240,595, Cl. 242-222.000.

Louviot, Jean F., to Regie Nationale des Usines Renault. Modular element for a hydraulic flow divider unit. 4,240,456, Cl. 137-100.000.

Lowther, Frank E., to Purification Sciences Inc. Internal combustion engine system. 4,240,381, Cl. 123-26.000.

Lubin, Louis. Propulsion system for hydrofoil, planing and semi-planing sea-going vessels. 4,240,370, Cl. 440-40.000.

Lucas Industries Limited: *See—*
Green, Stanley, 4,241,388, Cl. 362-268.000.

Lucchesi, Benedict R.: *See—*
Counsell, Raymond E.; and Lucchesi, Benedict R., 4,241,088, Cl. 424-329.000.

Lucid, Michael F.: *See—*
Bowerman, Paul D.; and Lucid, Michael F., 4,241,027, Cl. 423-10.000.

Lugaresi, Thomas J., to Timex Corporation. Thin touch type switch of sealed construction. 4,241,246, Cl. 200-52.00R.

Lukienko, Ekaterina P.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.

Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F. Aluminum-base alloy used as material for galvanic protector. 4,240,829, Cl. 75-147.000.

Lummus Company, The: *See—*
Suciu, George D.; and Paustian, John E., 4,240,885, Cl. 204-98.000.

Lumsden, John: *See—*
Gabb, Philip J.; Monk, Hayden; and Lumsden, John, 4,241,038, Cl. 423-493.000.

Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., to Michigan Technological University, Board of Control of. Structural members of composite wood material and process for making same. 4,241,133, Cl. 428-326.000.

Lund, Marlys E., to Minnesota Mining and Manufacturing Company. Broth medium for detection of DNAse-positive microorganisms. 4,241,181, Cl. 435-34.000.

Lurssen, Klaus: *See—*
Dickore, Karlfried; and Lurssen, Klaus, 4,240,820, Cl. 71-76.000.

Lutin, Matthew R. Educational amusement device for matching words with non-verbal symbols. 4,240,213, Cl. 434-194.000.

Lux, Peter, to U.S. Philips Corporation. Device for computed tomography. 4,241,404, Cl. 364-414.000.

Lvov, Vladimir M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Lytle, John D., to M.U. Engineering & Manufacturing, Inc. All plastic projection lens assembly with aspheric surface. 4,240,701, Cl. 350-189.000.

M.U. Engineering & Manufacturing, Inc.: *See—*
Lytle, John D., 4,240,701, Cl. 350-189.000.

Ma, Lit N.: *See—*
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.

Mabry, Ronald A.: *See—*
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

MacDougall, Ian C. Shaft assemblies for golf clubs. 4,240,631, Cl. 273-77.00A.

Mace, Mike: *See—*
Keever, Charles W., Jr., 4,240,211, Cl. 34-90.000.

Mace, Robert: *See—*
Keever, Charles W., Jr., 4,240,211, Cl. 34-90.000.

Machida, Hisashi; and Yoshihara, Yoichiro, to Kyoto Ceramic Co., Ltd. Synthetic single crystal for alexandrite gem. 4,240,834, Cl. 106-42.000.

Mackay, Donald A. M.: *See—*
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.

MacKay, Michael T., to B. R. MacKay & Sons. Inc. Ultra low volume processing of and cartridge for photographic fixer solution to recover silver therefrom. 4,240,617, Cl. 266-170.000.

Mackey, Joseph E.: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.

MacLeay, Ronald E., to Pennwalt Corporation. Process for the preparation of cumyl peroxides. 4,241,222, Cl. 568-561.000.

Madappally, Mathew M.; and Bucolo, Giovanni, to Coulter Electronics, Inc. Method for determining a transaminase in a biological fluid and reagent combination for use in the method. 4,241,179, Cl. 435-16.000.

Madsen, Harold L. Drapery hanger and manipulator. 4,240,489, Cl. 160-126.000.

Maeda, Takeshi: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.

Maeshima, Michihiro: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Maeyama, Teruaki; and Nakata, Hideo, to U.S. Philips Corporation. Comb filter circuit. 4,241,363, Cl. 358-36.000.

Mag, Theodore K.; and Reid, Margaret P., to Canada Packers Limited. Continuous process for contacting of triglyceride oils with an acid. 4,240,972, Cl. 260-424.000.

Mahany, Richard J.: *See—*
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.

Mahyera, Anil; and Duff, John, to Joy Manufacturing Company. Hydraulic jet cutting tool and method. 4,240,664, Cl. 299-17.000.

Maier, Roland: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

Maitani, Yoshihisa; and Yamada, Toyotaka, to Olympus Optical Co., Ltd. Protective cover for taking lens of camera. 4,240,735, Cl. 354-288.000.

Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., to Rockwell International Corporation. Single sideband signal demodulator. 4,241,451, Cl. 455-202.000.

Makino, Yoshiaki: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Makishima, Tukuo: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.

Maklakova, Tatyana A.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V. Instantaneous calendar device for timepieces. 4,240,249, Cl. 368-28.000.

Mandat, Kazimierz: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

Mandish, Doneath M.: *See—*
Mandish, Theodore O.; and Mandish, Doneath M., 4,241,107, Cl. 427-140.000.

Mandish, Theodore O.; and Mandish, Doneath M. Roof coating process. 4,241,107, Cl. 427-140.000.

Mannesmann Aktiengesellschaft: *See—*
Lather, Dieter; and Ries, Karl, 4,240,281, Cl. 73-1.0DV.

Manthei, Philip J., to Raytheon Company. Two-piece liquid rinse agent dispenser for clothes washing machine. 4,240,277, Cl. 68-17.00A.

Manziek, Larry, to Rohm and Haas Company. Borane reducing resins for removal of metal ions. 4,240,909, Cl. 210-688.000.

Mapco, Inc.: *See—*
Swain, Robert J.; and Rutz, William D., 4,240,908, Cl. 252-325.000.

Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., to McGraw-Edison Company. Switchgear voltage sensor. 4,241,373, Cl. 361-92.000.

Marchoisne, Yves F. P.: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.

Marconi Company Limited, The: *See—*
Langdon, Roger M., 4,240,285, Cl. 73-32.00A.

Mariaulle, Claude, to Automatisation-Sogemo. Coupling systems for conduits, particularly for semi-rigid plastic tubes. 4,240,651, Cl. 285-39.000.

Markle, David A.; and Offner, Abe, to Perkin-Elmer Corporation, The. System for illuminating an annular field. 4,241,390, Cl. 362-299.000.

Markun, Lovro: *See—*
Hagmann, Peter; and Markun, Lovro, 4,240,529, Cl. 187-90.000.

Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., to United States of America, Navy. Thermal signature targets. 4,240,212, Cl. 434-11.000.

Marshall, Robert A., to General Electric Company. Novel liquid metal current collector configuration. 4,241,272, Cl. 310-219.000.

Marston, Robert K.: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.

Martel, Virgil L., to Lehman-H Feeder & Plow, Inc. Land forming and/or farming apparatus. 4,240,216, Cl. 37-98.000.

Martin, Alton R.; and Tranquilli, Henry R., to Westvaco Corporation. Rotary bark screen. 4,240,589, Cl. 241-81.000.

Martin, Johannes J.; and Martin, Walter J., to Josef Martin Feuerungsbau GmbH. Grate for industrial furnaces. 4,240,402, Cl. 126-152.00B.

Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., to American Hoechst Corporation. Antidepressant (α-phenyl-2-tolyl)azacycloalkanes. 4,241,071, Cl. 424-267.000.

Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., to Xerox Corporation. Chemical process. 4,240,987, Cl. 570-206.000.

Martin, Virgil B., to Gehl Company. Forage harvester having water injection means to prevent gumming. 4,240,244, Cl. 56-16.400.

Martin, Walter J.: *See—*
Martin, Johannes J.; and Martin, Walter J., 4,240,402, Cl. 126-152.00B.

Martinengo, Pier C.; and Carughi, Carlo, to Fiat Societa per Azioni. Process for producing protective coatings on metals and metal alloys for use at high temperatures. 4,241,113, Cl. 427-229.000.

Marton, Henry J.; and Kurfman, Virgil B., to Dow Chemical Company, The. Delamination resistant multilayer metal/polymer composites. 4,241,129, Cl. 428-216.000.

Marvin Glass & Associates: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.

Marx, Jurgen: *See—*
Leifeld, Ferdinand; and Marx, Jurgen, 4,240,182, Cl. 19-81.000.

Masai, Hiroshi: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.

Masaki, Katsumi; and Kitamura, Takashi, to Canon Kabushiki Kaisha. Masking device for selectively preventing visualization of data from a data output system. 4,241,415, Cl. 364-900.000.

Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft: *See—*
Kraus, Hans, 4,240,528, Cl. 187-52.00R.

Mashimo, Toru, to Toyo Kogyo Co., Ltd. Drilling machine centering arrangement. 4,240,511, Cl. 173-1.000.

Mason, George D., to United States of America, Navy. Free gyro motor drive circuit. 4,240,301, Cl. 74-5.700.

Massad, Khalil E.: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.

Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., to Avery International Corporation. Fan-folded labeling technique. 4,240,854, Cl. 156-157.000.

Massey, Raymond P., to Telex Computer Products, Inc. Digital majority noise filter for bi-level data reception. 4,241,311, Cl. 328-167.000.

Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., to Shell Oil Company. Sand detection. 4,240,287, Cl. 73-61.00R.

Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, to Nissan Motor Company, Limited. Retractable glow plug for diesel engine. 4,240,392, Cl. 123-145.00A.

Materia, Peter; and Desai, Jayraj S., to Becton, Dickinson and Company. Culture bottle having stopper lock. 4,241,188, Cl. 435-296.000.

Matijevic, Egon; and Visca, Mario, to Montedison S.p.A. Spherical titanium dioxide particles and process of manufacture. 4,241,042, Cl. 423-610.000.

Matsuda, Masato: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Spliced joint of spun yarn and method for producing same. 4,240,247, Cl. 57-202.000.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Matsui, Takeshi: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.

Matsumoto, Kenji; and Sakaoka, Gouji, to Pentel Kabushiki Kaisha. Mechanical pencil having guides to match guides on a refill cartridge. 4,240,759, Cl. 401-85.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, to Nippon Shinyaku Co. Ltd. 9H-Pyrido[3,4-b]indole derivatives. 4,241,064, Cl. 424-256.000.

Matsuoka, Michio: *See—*
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Koda, Minoru; and Muya, Tsuneo, 4,241,365, Cl. 360-73.000.
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.

Mattern, Gunter: *See—*
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.

Maxson Corporation, The: *See—*
Puariea, Douglas A., 4,240,355, Cl. 105-273.000.

Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., to Operating Systems, Inc. Finite state automaton with multiple state types. 4,241,402, Cl. 364-200.000.

Mayweather, William T., to Western Electric Company, Inc. Method of plating the surface of a substrate. 4,241,105, Cl. 427-125.000.

Maywood, Joseph: *See—*
Harlow, John H., Jr.; and Maywood, Joseph, 4,240,517, Cl. 180-295.000.

McAleer, William J.: *See—*
Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.

McCanney, Neil R., to Reflectone, Inc. Voice modification system. 4,241,235, Cl. 179-1.0SH.

McCauley, James W.; and Corbin, Normand D., to United States of America, Army. Process for producing polycrystalline cubic aluminum oxynitride. 4,241,000, Cl. 264-65.000.

McClean, John W., to Breville Holdings Pty. Limited. Citrus juicer attachment for food processor. 4,240,338, Cl. 99-501.000.

McDonald, Dennis K., to Babcock & Wilcox Company, The. Support device for a pressure vessel. 4,240,602, Cl. 248-58.000.

McDougal, Allan R.: *See—*
United States of America, National Aeronautics and Space Administration; and McDougal, Allan R., 4,240,256, Cl. 60-518.000.

McGee, John K., to Combustion Engineering, Inc. Heat responsive back seat arrangement for valve operator with manual override. 4,240,455, Cl. 137-77.000.

McGraw-Edison Company: *See—*
Douglass, James D.; and Chase, Albert T., 4,241,324, Cl. 336-217.000.
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.

McKee, Phyllis L. Document display piece. 4,240,543, Cl. 206-39.000.

McKinley, John R.; and Roeschlaub, John G., to Occidental Research Corporation. Apparatus and method for the selective wetting of particles. 4,241,102, Cl. 209-3.100.

McLaughlin, Thomas P., to Stouffer Corporation, The. Adjustable spacers for flat plate conveyors. 4,240,270, Cl. 62-341.000.

McMaster, Harold A.; and Nitschke, Norman C. Method and apparatus for forming tempered sheet glass with a pyrolytic film in a continuous process. 4,240,816, Cl. 65-60.00R.

McNaney, Joseph T. Graphic symbol line position control means for high speed printing. 4,240,715, Cl. 350-358.000.

McNeely, Gerald W., to Akzona Incorporated. Sterilization indicator. 4,240,926, Cl. 252-408.000.

McNeil Corporation: *See—*
Wegmann, Jerome B.; and Kotyk, Jeffrey M., 4,240,328, Cl. 91-287.000.

McPhee, Donald J.; and Gray, Herbert W., to Gates Rubber Company, The. Extruder head for making elastomer-fiber composite hose. 4,240,782, Cl. 425-467.000.

McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., to Clow Corporation. Composite pipe having an integral bell end. 4,240,470, Cl. 138-109.000.

Mead Corporation, The: *See—*
Dickens, Luther I., 4,240,557, Cl. 211-153.000.
Stout, James T., 4,240,545, Cl. 206-188.000.

Mechlowitz, Bela: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,241,156, Cl. 430-41.000.

Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, to Bayer Aktiengesellschaft. Process for the preparation of dihydroxypolyurethanes and the use thereof as adhesives or as raw materials for adhesives. 4,240,861, Cl. 156-331.000.

Meckel, Walter: *See—*
Wenzel, Wolfgang; Meckel, Walter; and Pedain, Josef, 4,240,942, Cl. 260-29.2TN.

Medical, Incorporated: *See—*
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, 4,240,161, Cl. 3-1.500.

Medvetz, Edward J.; and Yandrick, Rudolph M. Animal trap. 4,240,223, Cl. 43-58.000.

Meeker, Paul K., to Century Products, Inc. Reclining chair. 4,240,625, Cl. 272-86.000.

Mehnert, Walter, to Naviga-Etablissement, Firma. Winch for the slip-free hauling of a rope. 4,240,612, Cl. 254-344.000.

MEI Systems Inc.: *See—*
Farin, William G., 4,241,041, Cl. 423-563.000.

Meis, Charles H.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Meisinger, Stanlee W.: *See—*
Herzan, Eugene H.; and Meisinger, Stanlee W., 4,240,466, Cl. 137-614.040.

Mendenhall, Robert L. Asphaltic concrete patch mixing and heating apparatus and method. 4,240,754, Cl. 366-4.000.

Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.

Merck & Co., Inc.: *See—*
Bolhofer, William A., 4,241,072, Cl. 424-270.000.
Hannah, John, 4,241,062, Cl. 424-251.000.
Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.

Merckel, Gerard: *See—*
Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, 4,241,262, Cl. 307-221.00D.

Merkulov, Vasily V.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Merriweather, Kenneth A., to Bendix Corporation, The. Measurement indicating apparatus and method. 4,241,342, Cl. 340-753.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.
Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, 4,241,227, Cl. 568-761.000.

Metodiev, Metodi S.: *See—*
Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.

Metretek Incorporated: *See—*
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, 4,241,237, Cl. 179-2.0AM.

Mettler Instrumente AG: *See—*
Lang, Karl, 4,241,018, Cl. 422-75.000.

Meyer, Burton C.: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.

Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, to Amax Inc. Dissolution of nickeliferous sulfide material in HCl. 4,241,031, Cl. 423-150.000.

Michels, Lowell S.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Michigan Technological University, Board of Control of: *See—*
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.

Michlmayr, Manfred J.: *See—*
Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.

Michon, Gerald J.: *See—*
Burke, Hubert K.; and Michon, Gerald J., 4,241,421, Cl. 365-183.000.

Micro Gage, Inc.: *See—*
Di Giovanni, Mario, 4,241,325, Cl. 338-4.000.

Micro-Mega S.A.: *See—*
Leonard, Henri, 4,240,473, Cl. 141-91.000.

Mieville, Rodney L., to Standard Oil Company (Indiana). Reforming catalyst comprising iridium, zirconia, and alumina. 4,240,934, Cl. 252-466.0PT.

Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, to Fuji Photo Film Co., Ltd. Highly-sensitive high-contrast photographic materials. 4,241,164, Cl. 430-264.000.

Miki, Kiyotsune, to SM Industrial Company, Limited. Curtain runner. 4,240,178, Cl. 16-93.00D.

Milberger, Ernest C.; and Wong, Eunice K. T., to Standard Oil Company. Oxidation catalysts. 4,240,931, Cl. 252-438.000.

Miles Laboratories, Inc.: *See—*
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., 4,241,069, Cl. 424-263.000.

Miller, Gabriel L.: *See—*
Celler, George K.; and Miller, Gabriel L., 4,240,843, Cl. 148-1.500.

Miller, George A.; and Weiler, Ernest D., to Rohm and Haas Company. Metal salt complexes of 3-isothiazolones. 4,241,214, Cl. 548-101.000.

Miller, William J.; McAleer, William J.; and Callahan, Lynn T., to Merck & Co., Inc. Assay for hepatitis B core antibody. 4,241,175, Cl. 435-7.000.

Millot, Jean-Paul, to Framatome. Process for controlling the reactivity effects due to the power variations in PWR nuclear reactors. 4,240,874, Cl. 176-22.000.

Mills, William R., Jr.: *See—*
Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., 4,241,253, Cl. 250-390.000.

Milne, James, to BICC Limited. Methods for preparing natural and artificial structures. 4,240,995, Cl. 264-36.000.

Milwaukee Cylinder Corporation: *See—*
Schink, Richard R., 4,240,464, Cl. 137-505.420.

Mima, Hiroshi: *See—*
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.

Mine Safety Appliances Company: *See*—
Bertone, Gregory A., 4,241,299, Cl. 318-474.000.
Mineral Process Licensing Corporation BV: *See*—
Gabb, Philip J.; Monk, Hayden; and Lumsden, John, 4,241,038, Cl. 423-493.000.
Minnesota Micro Metal, Inc.: *See*—
Frantzen, John J., 4,240,806, Cl. 51-295.000.
Minnesota Mining and Manufacturing Company: *See*—
Foslien, Floyd L., 4,240,280, Cl. 72-410.000.
Lund, Marlys E., 4,241,181, Cl. 435-34.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Minuto, Maurice M. Antibacterial and antifungal compositions. 4,241,084, Cl. 424-313.000.
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., to William H. Rorer, Inc. Dysmenorrhea treatment. 4,241,087, Cl. 424-324.000.
Mirzoian, Genrikh S.: *See*—
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.
Misumi, Teruo: *See*—
Fukuda, Tadaji; and Misumi, Teruo, 4,241,158, Cl. 430-86.000.
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., to International Business Machines Corporation. Tagged pointer handling apparatus. 4,241,396, Cl. 364-200.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Tanaka, Katsufusa, 4,240,300, Cl. 74-2.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,241,116, Cl. 427-386.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Ueda, Masato; and Andoh, Takeshi, 4,241,110, Cl. 427-203.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Ashie, Yutaka; and Nakamura, Yasuhiro, 4,241,143, Cl. 428-512.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.
Mitsuboshi Belting Ltd.: *See*—
Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, 4,240,283, Cl. 73-7.000.
Mitsuhashi, Yoshio. Combined punching and stapling device. 4,240,572, Cl. 227-76.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
Miyagishi, Shigeki: *See*—
Yamazaki, Takeo; and Miyagishi, Shigeki, 4,240,307, Cl. 74-503.000.
Miyaki, Kiyoshi: *See*—
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Miyamoto, Takayoshi: *See*—
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Miyauchi, Toshimitsu: *See*—
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Miyazaki, Joichi: *See*—
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.
Mizote, Hiroyuki: *See*—
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.
Mobay Chemical Corporation: *See*—
Bailey, Robert J., 4,241,131, Cl. 428-262.000.
Moberly, Lawrence E.: *See*—
Johnson, John L.; and Moberly, Lawrence E., 4,241,271, Cl. 310-219.000.
Mobil Oil Corporation: *See*—
Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., 4,241,253, Cl. 250-390.000.
Andress, Harry J., Jr., 4,240,803, Cl. 44-63.000.
Audeh, Costandi A.; and Yan, Tsoung-yuan, 4,240,901, Cl. 208-324.000.
Bloomquist, Marvin G.; and Wang, Yung-liang, 4,241,429, Cl. 367-52.000.
Braid, Milton, 4,240,958, Cl. 260-139.000.
Chibnik, Sheldon, 4,240,970, Cl. 260-346.740.
Drinkard, B. M., 4,241,230, Cl. 585-259.000.
Tange, Charles H., 4,240,575, Cl. 229-29.00M.
Yan, Tsoung-yuan, 4,241,026, Cl. 423-7.000.
Modern Automatic Alarms Limited: *See*—
Barnes, Brian S., 4,241,335, Cl. 340-507.000.
Moeller, Rolf: *See*—
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.
Mohnach, Michael G.: *See*—
Harbison, William H.; and Mohnach, Michael G., 4,240,177, Cl. 15-250.320.
Molenaar, Adrianus, to Molenaar's Betonindustrie B.V. Process for setting up the shuttering for a building wall, and setting block to be used in this process. 4,240,236, Cl. 52-741.000.
Molenaar's Betonindustrie B.V.: *See*—
Molenaar, Adrianus, 4,240,236, Cl. 52-741.000.
Molins Machine Company, Inc.: *See*—
Craemer, Robert H.; and Evans, Donald J., 4,240,856, Cl. 156-205.000.
Moll, William F., Jr.; and Thompson, Thomas D., III, to Yara Engineering Corporation. Rheological control of polyester-styrene resin compositions. 4,240,951, Cl. 260-40.00R.
Molz, Harold A. Mainsail and/or mizzensail furling device. 4,240,369, Cl. 114-106.000.
Momiyama, Kikuo, to Canon Kabushiki Kaisha. Telephoto lens. 4,240,703, Cl. 350-214.000.
Momose, Yutaka: *See*—
Nakamura, Kazuaki; and Momose, Yutaka, 4,240,262, Cl. 62-55.500.
Monk, Hayden: *See*—
Gabb, Philip J.; Monk, Hayden; and Lumsden, John, 4,241,038, Cl. 423-493.000.
Monsanto Company: *See*—
Huck, Rodney M., 4,240,948, Cl. 260-29.300.
Montedison S.p.A.: *See*—
Matijevic, Egon; and Visca, Mario, 4,241,042, Cl. 423-610.000.
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, 4,241,037, Cl. 423-348.000.
Montoya, Lawrence C.; and Bellman, Donald R., to United States of America, National Aeronautics and Space Administration. Skin friction measuring device for aircraft. 4,240,290, Cl. 73-178.00R.
Monvoisin, Jacques, to Tecal S.A.R.L. Automatic machine for serigraphic printing. 4,240,343, Cl. 101-38.00R.
Mookherjee, Braja D.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.
Moore, Alan F., to Dunlop Limited. Resilient couplings. 4,240,763, Cl. 403-203.000.
Moore, Allen D., to Otis Engineering Corporation. Safety valve actuator and pilot system. 4,240,463, Cl. 137-492.500.
Moore, Garry L.: *See*—
Keyes, Melvin H.; and Moore, Garry L., 4,241,180, Cl. 435-20.000.
Morelock, Charles R.: *See*—
Laskow, William; and Morelock, Charles R., 4,240,835, Cl. 106-44.000.
Mori, Eiko: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Morikawa, Yukiteru; and Nishikawa, Hideo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Germicidal composition for agriculture and horticulture. 4,241,083, Cl. 424-309.000.
Morimoto, Kiyoshi; and Watanabe, Hiroshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Light emitting diode display device. 4,241,281, Cl. 315-161.000.
Morimura, Syoji: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Morin, Armand. Combined scarifier and branch slashing and crushing implement. 4,240,510, Cl. 172-547.000.
Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Flash system changeover device for the shutter of camera. 4,240,732, Cl. 354-138.000.
Morita, Lawrence H.: *See*—
Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I., 4,240,544, Cl. 206-0.820.
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, to Nissan Motor Company, Limited. Carburetor with multiconduit nozzle. 4,240,989, Cl. 261-78.00R.
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer. Mucous membrane cutter for mucogingival membrane surgery. 4,240,432, Cl. 128-305.500.
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Microprocessor controlled game apparatus. 4,240,638, Cl. 273-237.000.
Morton, Alexander R.: *See*—
Bell, Harris N.; and Morton, Alexander R., 4,240,593, Cl. 242-71.800.
Moshier, Stephen L.: *See*—
Bahler, Lawrence G.; and Moshier, Stephen L., 4,241,329, Cl. 340-146.30R.
Moskowitz, Larry N.; and Klar, Erhard, to SCM Corporation. Process of making nickel or cobalt powder with precipitates. 4,240,824, Cl. 75-0.50C.
Mosley, Earnest D. Chain sprocket with opposite frangible side guide plates. 4,240,303, Cl. 474-144.000.
Motorola, Inc.: *See*—
Hughes, Henry G.; and Keller, Jed V., 4,241,165, Cl. 430-269.000.
Kwitkowski, Peter A., 4,241,448, Cl. 455-115.000.
Shinn, William T., 4,240,311, Cl. 82-12.000.

Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of a multi-cylinder internal combustion engine. 4,240,387, Cl. 123-52.00M.

Motoyoshi, Kunihiro: *See*—
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.

Mouland, John: *See*—
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.

Mourier, Jacqueline: *See*—
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.

Mrongowius, Klaus: *See*—
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Mueller, Hans-Richard: *See*—
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.

Muggli, Jurg: *See*—
Tresch, Erwin; and Muggli, Jurg, 4,241,282, Cl. 250-574.000.

Muller-Albrecht, Horst: *See*—
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.

Muller, Karl-Heinz: *See*—
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.

Muller, Klaus: *See*—
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.

Muller-Schiedmayer, Gunther; and Aigner, Rudolf, to Hoechst Aktiengesellschaft. Process for the manufacture of N,N,N',N'-tetraacetylethylenediamine. 4,240,980, Cl. 564-153.000.

Mullin, Steven W.: *See*—
Sawby, Scott; and Mullin, Steven W., 4,240,201, Cl. 30-161.000.

Multilin Inc.: *See*—
Schonken, Tobias D., 4,241,336, Cl. 340-518.000.

Mulvey, Robert F.: *See*—
Crepeau, Charles E.; and Mulvey, Robert F., 4,240,839, Cl. 106-88.000.

Munroe, Thomas. Wood pallet. 4,240,358, Cl. 108-51.100.

Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Electronic fuze. 4,240,350, Cl. 102-215.000.

Murano, Mitsuo: *See*—
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Murata Kikai Kabushiki Kaisha: *See*—
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.

Murata, Mitsuhiro, to Citizen Watch Co., Ltd. Electronic timepiece. 4,241,441, Cl. 368-247.000.

Muraviev, Alexandr V.: *See*—
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K., 4,240,818, Cl. 71-59.000.

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, to Sankyo Company Limited. Piperidine derivatives. 4,241,208, Cl. 546-20.000.

Murphy, Lawrence R.: *See*—
Alspaugh, Mark H.; and Murphy, Lawrence R., 4,241,352, Cl. 343-700.0MS.

Muschelknautz, Edgar: *See*—
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.

Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Flavoring with a mixture of cis-3-hexenal, trans-2-hexenal, cis-3-hexenyl formate, cis-3-hexenol and cis-3-hexenyl-cis-3-hexenoate. 4,241,098, Cl. 426-534.000.

Mustonen, Eelis J. Self-propelled crane with a telescopic boom and additional boom means. 4,240,558, Cl. 212-175.000.

Mutschler, Erich: *See*—
Botz, Jakob; Mutschler, Erich; and Weber, Adam, 4,241,260, Cl. 307-10.0LS.

Muya, Tsuneo: *See*—
Koda, Minoru; and Muya, Tsuneo, 4,241,365, Cl. 360-73.000.

Myers, Drewfus Y., Jr.; and Hawks, George H., III, to Eastman Kodak Company. Photographic elements containing encapsulated polymers coordinated with metal ions. 4,241,163, Cl. 430-213.000.

Myles, Thomas A., to Carborundum Company, The. Shrink-resistant refractory fiber and process for making same. 4,240,833, Cl. 106-39.600.

Naef, Hansjorg: *See*—
Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, 4,240,350, Cl. 102-215.000.

Nagano, Yasuaki, to Shibuya Kogyo Co., Ltd. Label feeding apparatus. 4,240,868, Cl. 156-572.000.

Nagaoka, Takenori: *See*—
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.

Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control device for fuel injected internal combustion engine. 4,240,391, Cl. 123-454.000.

Nagy, Alex L.: *See*—
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Nagy, Ernest J., to Pullman Incorporated. Modular storage arrangement for a passenger vehicle. 4,240,356, Cl. 105-323.000.

Naito, Junichiro: *See*—
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.

Naito, Kiyoshi; and Syukuya, Akio, to Shinagawa Refractories Co., Ltd. Intermittent top firing tunnel kiln equipped with a burner having a ceramic air nozzle. 4,240,788, Cl. 432-136.000.

Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Takaaki; and Yamashita, Haruhiro, to Bristol-Myers Company. Purine derivatives and their use as bronchodilators. 4,241,063, Cl. 424-253.000.

Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Drawer type emergency escape. 4,240,521, Cl. 182-84.000.

Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Interior unit of a split type air-conditioning apparatus. 4,240,264, Cl. 62-125.000.

Nakagaki, Harushige; and Inoue, Shigeki, to Hitachi, Ltd. Remote-controlled receiver. 4,241,456, Cl. 455-603.000.

Nakagawa, Katsumi: *See*—
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Nakagawa, Susumu: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.

Nakagoshi, Kazuo: *See*—
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.

Nakajima, Yasuo: *See*—
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.

Nakamura, Kazuaki; and Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Cryopump device. 4,240,262, Cl. 62-55.500.

Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, to Nissan Motor Company, Limited. Engine system for motor vehicle. 4,240,253, Cl. 60-278.000.

Nakamura, Kotaro: *See*—
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.

Nakamura, Yasuhiro: *See*—
Ashie, Yutaka; and Nakamura, Yasuhiro, 4,241,143, Cl. 428-512.000.

Nakanishi, Hikaru, to Senko Medical Instruments Mfg. Co., Ltd. Method of treating capillary fibers. 4,240,796, Cl. 8-137.500.

Nakanishi, Hiromasa: *See*—
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Nakanishi, Shusaku: *See*—
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

Nakano Vinegar Co., Ltd.: *See*—
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.

Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, to Nippon Soken, Inc. Exhaust gas purifying apparatus for multicylinder internal combustion engines. 4,240,254, Cl. 60-293.000.

Nakata, Hideo: *See*—
Maeyama, Teruaki; and Nakata, Hideo, 4,241,363, Cl. 358-36.000.

Nakatani, Seiichi: *See*—
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.

Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, to Matsushita Electric Industrial Co., Ltd. Combustible gas detecting element. 4,241,019, Cl. 422-94.000.

Nakayama, Yoshiro: *See*—
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.

Namiki, Ryoichi, to Ricoh Company, Ltd. Method of producing heat pipe roller. 4,240,189, Cl. 29-157.30R.

Nannini, Alessandro: *See*—
Urbinati, Mario; and Nannini, Alessandro, 4,240,384, Cl. 123-470.000.

Naruse, Jun: *See*—
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.

Nash, Donald H., to Bell Telephone Laboratories, Incorporated. Noise range indicating system. 4,241,236, Cl. 179-2.0EA.

Nash, Robert E.: *See*—
Baresh, Joseph M.; and Nash, Robert E., 4,240,206, Cl. 33-174.00Q.

Nasu, Rikuo: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

National Research Development Corporation: *See*—
Devas, Michael B., 4,240,162, Cl. 3-1.910.
Dobson, John V., 4,240,879, Cl. 204-1.00T.
Farmer, Victor C., 4,241,035, Cl. 423-327.000.

National Semiconductor Corporation: *See*—
Kmetz, Gerald L., 4,240,317, Cl. 84-1.010.
National Tube & Reel Corporation: *See*—
Louden, Samuel, 4,240,595, Cl. 242-222.000.
National Union Electric Corporation: *See*—
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.
Naviga-Etablissement, Firma: *See*—
Mehnert, Walter, 4,240,612, Cl. 254-344.000.
Nawa, Kooichiro, to Yoshida Kogyo K.K. Glazed closure assembly. 4,240,235, Cl. 52-397.000.
Nease, John C.: *See*—
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.
Nedovizy, Ivan N.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Neild, A. Bayne: *See*—
Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, 4,240,676, Cl. 308-9.000.
Nelson, John F., to Illinois Tool Works Inc. Combined level indicator and hydrometer. 4,240,282, Cl. 73-447.000.
Nersesian, Ara: *See*—
Durbak, Taras; and Nersesian, Ara, 4,241,048, Cl. 424-45.000.
Nestor, Jack; and Zager, Raymond. Motorized crankcase oil changing system. 4,240,523, Cl. 184-1.500.
Neumayr, Hans: *See*—
Taeuber, Reinhard; and Neumayr, Hans, 4,241,331, Cl. 340-167.00R.
Nevin, William; and Spector, George. Combined display container, cigarette lighter, candle holder. 4,240,783, Cl. 431-253.000.
New Castle Industries, Inc.: *See*—
Frankland, James D., Jr., 4,240,755, Cl. 366-88.000.
Newkirk, David D.; and Login, Robert B., to BASF Wyandotte Corporation. Fiber lubricants derived from the oxyalkylation of a glycerol-1,3-dialkylether. 4,241,224, Cl. 568-619.000.
Newkirk, John B. Peritoneo-venous shunt. 4,240,434, Cl. 128-350.00V.
Newman, Morris: *See*—
Holt, James H., Jr.; and Newman, Morris, 4,240,503, Cl. 166-55.000.
Newman, Timothy L. Truck mounted railroad crane rail gear assembly. 4,240,354, Cl. 105-215.00C.
NGK Insulators, Ltd.: *See*—
Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, 4,240,890, Cl. 204-195.00S.
Nguyen, Van L., to Sereg. Method and apparatus for determining the temperature of the condensation point of a substance. 4,240,284, Cl. 73-17.00A.
Niagara Blower Company: *See*—
Kals, Walter, 4,240,499, Cl. 165-1.000.
Niagara Envelope Co. Inc.: *See*—
Harrigan, Richard V., 4,240,577, Cl. 229-76.000.
Nibco, Inc.: *See*—
Edwards, Robert B.; and Jayne, Theodore D., 4,240,492, Cl. 164-34.000.
Nicholas, Darrell D.: *See*—
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.
Nichols, Wallace H., Jr. Internal combustion engine fuel composition containing toxic agent for dispersion in the exhaust fumes of the engine. 4,240,802, Cl. 44-58.000.
Nicholson, Harry W. Protective device for car coupler. 4,240,559, Cl. 213-1.00R.
Nicolas, Maurice; and Bacconnet, Eugene, to Commissariat a l'Energie Atomique; and BFG Glassgroup. Process for producing a composite element comprising sheet members secured to a support and such composite elements. 4,241,126, Cl. 428-174.000.
Nifco Inc.: *See*—
Kojima, Masaharu, 4,240,323, Cl. 85-80.000.
Nikex Nehezipari Kulkereskedelmi Vallalat: *See*—
Demeter, Laszlo; and Demeter, Akos, 4,240,911, Cl. 210-794.000.
Nikolic, Cvetko: *See*—
Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, 4,240,886, Cl. 204-112.000.
Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, 4,241,031, Cl. 423-150.000.
Nippon Electric Co., Ltd.: *See*—
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,241,103, Cl. 427-103.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iwamatsu, Masayuki, 4,241,314, Cl. 330-253.000.
Takehara, Takao, 4,241,313, Cl. 330-253.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Morikawa, Yukiteru; and Nishikawa, Hideo, 4,241,083, Cl. 424-309.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Takahashi, Nobuhiro; and Hirata, Ken-ichi, 4,240,616, Cl. 266-119.000.
Nippon Shinyaku Co. Ltd.: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Nippon Soken, Inc.: *See*—
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.
Nippondenso Co., Ltd.: *See*—
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, to Hitachi, Ltd. Magnetic head loading apparatus. 4,241,366, Cl. 360-105.000.
Nishii, Masaru: *See*—
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.
Nishikawa, Hideo: *See*—
Morikawa, Yukiteru; and Nishikawa, Hideo, 4,241,083, Cl. 424-309.000.
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Power steering apparatus for vehicle. 4,240,331, Cl. 91-434.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, to Ishihara Sangyo Kaisha Limited. Process for producing 2-chloro-5-trichloromethyl pyridine. 4,241,213, Cl. 546-345.000.
Nishizawa, Rinzo: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.
Nissan Chemical Industries, Ltd.: *See*—
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.
Nissan Motor Company, Limited: *See*—
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, 4,240,392, Cl. 123-145.00A.
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.
Tokunaga, Masayuki; and Otsuka, Yoshio, 4,240,672, Cl. 303-92.000.
Nissen, Axel: *See*—
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Nitschke, Norman C.: *See*—
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Nitto Electric Industrial Co., Ltd.: *See*—
Iwama, Akio; Kihara, Yasuo; and Abe, Masao, 4,240,914, Cl. 210-500.200.
Niwa, Masatake: *See*—
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Noda, Etsunosuke: *See*—
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.
Noell, Robert E., Jr. Amusement device. 4,240,536, Cl. 194-1.00K.
Nogami, Tomoyuki: *See*—
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.
Nold, Frank P.: *See*—
Lichter, Seymour; and Nold, Frank P., 4,240,998, Cl. 264-45.400.
Lichter, Seymour; and Nold, Frank P., 4,241,190, Cl. 521-54.000.
Nolf, Jean-Marie. Hand held pen-size calculator. 4,241,409, Cl. 364-705.000.
Nomiyama, Yoshitsugu: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Nomura, Junji: *See*—
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.
Nomura, Katsuhiko; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Motor-drive camera using a cartridge film. 4,240,734, Cl. 354-173.000.
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Thin film magnetic head. 4,241,367, Cl. 360-127.000.
Nomura, Shin-ichiro: *See*—
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.
Nomura, Syunichi: *See*—
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.
Nonogaki, Saburo: *See*—
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.
Nordson Corporation: *See*—
Gardner, James J., 4,240,567, Cl. 222-146.0HE.
Grevich, John J.; and Denker, Stanley D., 4,240,336, Cl. 493-196.000.

Norfleet, James: *See—*
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Gross, Glenn M., 4,241,408, Cl. 364-703.000.
Normalair-Garrett (Holdings) Limited: *See—*
Furlong, Owen D.; and Thring, Robin H., 4,240,419, Cl. 128-204.230.
Norman, Lloyd W.: *See—*
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Norris, Richard W., Jr.: *See—*
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Notaro, Giuseppe: *See—*
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Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.
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Dietz, Richard E.; and Nowlin, Oscar D., 4,240,929, Cl. 252-429.00B.
Nudenberg, Walter: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,240,974, Cl. 260-456.00P.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Control circuit for an automatic electronic flash light device. 4,241,279, Cl. 315-151.000.
Oakley, Raymond E.: *See—*
Dickson, John F.; and Oakley, Raymond E., 4,241,424, Cl. 365-218.000.
O'Brien, Edward F.: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,011, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,012, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,013, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,016, Cl. 422-17.000.
Occidental Research Corporation: *See—*
McKinley, John R.; and Roeschlaub, John G., 4,241,102, Cl. 209-3.100.
Oce-Nederland B.V.: *See—*
Ensing, Hendrik, 4,241,161, Cl. 430-126.000.
O'Connor, Lawrence, to Kable Tapes Ltd. Combined shield and core wrap for telecommunication cables and the like. 4,241,121, Cl. 428-77.000.
Odom, Martin A.: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.
Odom, William, to Odom, Martin A.; Presley, Pauline B.; Vineyard, Clark; and Hagler, James D., part interest to each. Electronic traffic control and warning system. 4,241,326, Cl. 340-33.000.
Oehler-Whylen-Lagertechnik AG: *See—*
Hagmann, Peter; and Markun, Lovro, 4,240,529, Cl. 187-90.000.
Offner, Abe: *See—*
Markle, David A.; and Offner, Abe, 4,241,390, Cl. 362-299.000.
Offterdinger, Hermann F. Corner construction. 4,240,765, Cl. 403-402.000.
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle zoom lens having a high variation ratio. 4,240,700, Cl. 350-184.000.
Ogren, Hans, to Aktiebolaget Ogrens Svets-och Mek. Verkstad. Yoke. 4,240,661, Cl. 294-82.0AH.
Ohashi, Yasuo: *See—*
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Ohira, Tadayoshi: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, to Nippon Electric Co., Ltd. Method of manufacturing an integrated thermal printing head. 4,241,103, Cl. 427-103.000.
Ohno, Ietatsu. Immersion type grinding apparatus. 4,240,229, Cl. 51-7.000.
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Braking hydraulic pressure control unit for motor vehicle. 4,240,671, Cl. 303-6.00C.
Ohsawa, Hisayou: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Ohta, Eiichi: *See—*
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Ohta, Noriyuki: *See—*
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Oikawa, Shigeru: *See—*
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.
Okamura, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Sealing apparatus for refrigerators and method of manufacture thereof. 4,240,228, Cl. 49-478.000.
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,241,172, Cl. 430-548.000.
Okita, Taka-aki: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Okubo, Kunio: *See—*
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.
Okudaira, Sadao: *See—*
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Keyboard type electronic musical instrument. 4,240,316, Cl. 84-1.010.
Olin Corporation: *See—*
Gray, Thomas J., 4,240,895, Cl. 204-290.00R.
Oliver Tire and Rubber Company: *See—*
King, Michael J., 4,240,851, Cl. 156-96.000.
Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.
Olsen, Willi, to Siemens Aktiengesellschaft. Gas pressurized high voltage switching installation. 4,241,379, Cl. 361-335.000.
Olson, Goodwin W. Auxiliary reflector. 4,241,393, Cl. 362-348.000.
Olsson, Lars-Goran: *See—*
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.
Olympus Optical Co., Ltd.: *See—*
Goto, Atsuo, 4,240,704, Cl. 350-220.000.
Hosono, Saburo, 4,240,411, Cl. 128-4.000.
Komiya, Osamu, 4,240,431, Cl. 128-303.100.
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,240,735, Cl. 354-288.000.
Osanai, Akira, 4,240,551, Cl. 206-387.000.
Yonekubo, Ken, 4,241,251, Cl. 250-205.000.
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method for controlling timing of spark ignition for an internal combustion engine. 4,240,388, Cl. 123-425.000.
OMV Aktiengesellschaft: *See—*
Ecker, Alfred, 4,240,949, Cl. 260-30.80R.
Ondetti, Miguel A.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. Halogenated substituted mercaptoacylamino acids. 4,241,076, Cl. 424-274.000.
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., to Pillsbury Company, The. Potato dehydration. 4,241,094, Cl. 426-324.000.
Ong, Helen H.: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.
Ono, Haruaki: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Oono, Shigeru: *See—*
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.
Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Device for baling cut crops. 4,240,245, Cl. 56-341.000.
Operating Systems, Inc.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.00M.
Opgenorth, Hans-Joachim: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Optisch Werke G. Rodenstock: *See—*
Guilino, Gunter; and Barth, Rudolf, 4,240,719, Cl. 351-169.000.
Orban, Robert A. Peak-limiting apparatus for audio signal. 4,241,266, Cl. 307-237.000.
Orc Manufacturing Co., Ltd.: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Oronzio de Nora Implanti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto, 4,240,884, Cl. 204-95.000.
Osakeyhtio, A. Ahlstrom: *See—*
Tuomaala, Jorma, 4,240,315, Cl. 83-848.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Magnetic tape cassette holder. 4,240,551, Cl. 206-387.000.

Oschatz GmbH: *See*—
Geising, Winfried, 4,241,232, Cl. 13-32.000.
Osmond, Desmond W. J.: *See*—
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.
Ospanov, Ergali: *See*—
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.
Ostberg, Jan-Erik. Stirrer for metallurgical melts. 4,240,618, Cl. 266-235.000.
Otis Engineering Corporation: *See*—
Moore, Allen D., 4,240,463, Cl. 137-492.500.
Otsubo, Iwao: *See*—
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.
Otsuka, Yoshio: *See*—
Tokunaga, Masayuki; and Otsuka, Yoshio, 4,240,672, Cl. 303-92.000.
Ottenholm, Tor A. I. Method for manufacturing a building element. 4,240,994, Cl. 264-26.000.
Otto, Johann: *See*—
Feuerbaum, Hans P.; and Otto, Johann, 4,241,259, Cl. 250-457.000.
Ouwerkerk, Cornelis: *See*—
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.
Owen, Bruce R.: *See*—
Sarle, Charles R.; and Owen, Bruce R., 4,240,678, Cl. 308-121.000.
Owens-Corning Fiberglas Corporation: *See*—
Chrisman, Max G., 4,240,847, Cl. 156-62.200.
Dereser, Ernst, 4,241,136, Cl. 428-378.000.
Owens-Illinois, Inc.: *See*—
Keyes, Melvin H.; and Moore, Garry L., 4,241,180, Cl. 435-20.000.
Ozeki, Masakatsu: *See*—
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,052, Cl. 424-180.000.
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,053, Cl. 424-180.000.
Pack Image, Inc.: *See*—
Stone, Orison W., 4,240,546, Cl. 206-193.000.
Pagel, Werner: *See*—
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.
Pako Corporation: *See*—
Anderson, Richard D.; and Wedel, John A., 4,240,741, Cl. 355-40.000.
Palmer, Stephen G.: *See*—
Angert, Richard W.; and Palmer, Stephen G., 4,240,258, Cl. 60-589.000.
Pan, Jing-Jong, to Harris Communications. Single optical fiber directional coupler. 4,240,694, Cl. 350-96.160.
Pankratz, Richard P.: *See*—
Work, Ray A., III; and Pankratz, Richard P., 4,241,169, Cl. 430-532.000.
Papahadjopoulos, Demetrios P.; and Szoka, Francis C., Jr. Method of encapsulating biologically active materials in lipid vesicles. 4,241,046, Cl. 424-19.000.
Papayoanou, Aristotle, to United States of America, Army. Dual channel waveguide gas laser. 4,241,319, Cl. 331-94.50G.
Papillon, Bernard: *See*—
Lagasse, Alain; and Papillon, Bernard, 4,240,918, Cl. 252-95.000.
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, to Metretek Incorporated. Apparatus and method for remote sensor monitoring, metering and control. 4,241,237, Cl. 179-2.0AM.
Paratte, Daniel: *See*—
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.
Parisi, Alessandro: *See*—
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, 4,241,037, Cl. 423-348.000.
Parker-Hannifin Corporation: *See*—
Herzan, Eugene H.; and Meisinger, Stanlee W., 4,240,466, Cl. 137-614.040.
Parker, Roy B.: *See*—
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.
Parrigin, Albert J.: *See*—
Chesnut, Amos E.; and Parrigin, Albert J., 4,240,401, Cl. 126-121.000.
Parrish, John F.: *See*—
Berni, Albert J.; and Parrish, John F., 4,241,428, Cl. 367-21.000.
Parsamian, Levon O.: *See*—
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Parsons, John A.: *See*—
Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G., 4,241,051, Cl. 424-177.000.
Parsons, William N. Swimmer's aid. 4,240,171, Cl. 9-307.000.
Partridge, Charles C., to ACF Industries, Incorporated. Controlled float seat arrangement for expanding gate valves. 4,240,608, Cl. 251-167.000.
Patel, Bhupendra C.: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.
Patel, Ramesh N.: *See*—
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.
Patterson, Raymond B., III; and Wood, Grady M., to Harris Corporation. Adjustable current source. 4,241,315, Cl. 330-261.000.
Paulsson, Bengt G.: *See*—
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.
Pauly, Alexander, to Siemens Aktiengeselischaft. Circuitry for operating read-only memories interrogated with static binary addresses within a two-channel safety switch mechanism having anti-valency signal processing. 4,241,417, Cl. 364-900.000.
Paustian, John E.: *See*—
Suciu, George D.; and Paustian, John E., 4,240,885, Cl. 204-98.000.
Pauze, Denis R.: *See*—
Jablonski, Richard J.; and Pauze, Denis R., 4,240,941, Cl. 260-29.2TN.
Payen, Georges A., to Societe Anonyme de Telecommunications. Method and apparatus for counting transmission errors in a digital microwave link. 4,241,445, Cl. 371-5.000.
Payne, Douglas L.; and Walter, Peter A. Bearing mounting device and bearing. 4,240,677, Cl. 308-15.000.
Pearce, Henry A., Jr.; and Walsh, Edward J., to Westinghouse Electric Corp. Transformer using catalytically hydrogenated bright stock fluid. 4,240,917, Cl. 336-94.000.
Pearson, Robert: *See*—
Piber, Earl T.; and Pearson, Robert, 4,241,297, Cl. 318-17.000.
Pedain, Josef: *See*—
Wenzel, Wolfgang; Meckel, Walter; and Pedain, Josef, 4,240,942, Cl. 260-29.2TN.
Pehrson, John V.: *See*—
Pehrson, Marie S., 4,240,208, Cl. 33-293.000.
Pehrson, Marie S., to Pehrson, John V. Hand-held laser surveying rod. 4,240,208, Cl. 33-293.000.
Pellegri, Alberto, to Oronzio de Nora Implanti Elettrochimici S.p.A. Electrolytic production of alkali metal hypohalite. 4,240,884, Cl. 204-95.000.
Pellerite, James J. Headjoint stopper. 4,240,320, Cl. 84-384.000.
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, to Montedison S.p.A. Process for purifying silicon. 4,241,037, Cl. 423-348.000.
Pennington, William. Method of welding plastic sheets edge-to-edge. 4,240,855, Cl. 156-159.000.
Pennwalt Corporation: *See*—
Bross, Charles F., 4,241,293, Cl. 235-92.0PK.
MacLeay, Ronald E., 4,241,222, Cl. 568-561.000.
Waltke, Robert W., 4,240,605, Cl. 249-54.000.
Pentel Kabushiki Kaisha: *See*—
Matsumoto, Kenji; and Sakaoka, Gouji, 4,240,759, Cl. 401-85.000.
Perard Engineering Limited: *See*—
Hubbard, Terence; and Jackson, Eric A., 4,240,665, Cl. 299-31.000.
Perchanok, Boris K.: *See*—
Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I., 4,241,269, Cl. 310-61.000.
Peredkov, Boris A.: *See*—
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V., 4,240,249, Cl. 368-28.000.
Perkin-Elmer Corporation, The: *See*—
Casas, Raul E., 4,240,702, Cl. 350-200.000.
Markle, David A.; and Offner, Abe, 4,241,390, Cl. 362-299.000.
Perkins, Harold W. Bag holder and collector construction. 4,240,474, Cl. 141-231.000.
Pernyeszi, Joseph, to International Telephone and Telegraph Corporation. Fluxbucking line transformer with electronic equivalent line terminating impedance. 4,241,239, Cl. 179-70.000.
Perry, Theodore M. Signal bladder. 4,240,371, Cl. 116-210.000.
Persson, Karl R., to Duni Bila AB. Distribution package. 4,240,576, Cl. 229-36.000.
Pestka, Sidney: *See*—
Familletti, Philip C_4 Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.
Peters, Russell E., to Coburn, James D. Self-service gasoline glove. 4,240,157, Cl. 2-161.00R.
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., to Westinghouse Electric Corp. Technique for fabricating radiation sensitive dosimeters. 4,240,992, Cl. 264-21.000.
Petrolite Corporation: *See*—
Tait, William S., 4,240,925, Cl. 252-389.00A.
Pevzner, Volf S.: *See*—
Semenov, Stepan S.; and Pevzner, Volf S., 4,241,245, Cl. 200-38.00R
Pfiffner, Albert, to Hoffmann-La Roche Inc. Heterocyclics useful as fungicides and fungicidal compositions thereof. 4,241,058, Cl. 424-248.400.
Pfizer Inc.: *See*—
Barth, Wayne E., 4,241,050, Cl. 424-114.000.
Pfuhl, Ingrid: *See*—
Pfuhl, Jakob, 4,240,367, Cl. 112-148.000.
Pfuhl, Jakob, to Pfuhl, Katharina; Pfuhl, Ingrid; and Kate Models Pty., Limited. Sewing aid device. 4,240,367, Cl. 112-148.000.
Pfuhl, Katharina: *See*—
Pfuhl, Jakob, 4,240,367, Cl. 112-148.000.

Philagro S.A.: *See—*
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.

Philip Morris Incorporated: *See—*
Gillespie, Andrew J., 4,240,313, Cl. 83-343.000.

Phillips, David C.; and Smith, James D. B., to Westinghouse Electric Corp. Protecting electrical apparatus with gas generating compounds. 4,241,195, Cl. 525-3.000.

Phillips Petroleum Company: *See—*
Dietz, Richard E.; and Nowlin, Oscar D., 4,240,929, Cl. 252-429.00B.
Kraus, Gerard; and Hunt, Harold R., 4,241,022, Cl. 422-156.000.
Swanson, Billy L., 4,240,505, Cl. 166-302.000.
Van Pool, Joe, 4,241,040, Cl. 423-542.000.

Phillips, Thomas E., to Youngstown Steel Door Company, The. Folding rail car doors. 4,240,357, Cl. 105-378.000.

PhotoScan South, Inc.: *See—*
Ardrey, Richard J., 4,241,376, Cl. 361-166.000.

Piber, Earl T.; and Pearson, Robert, to Eaton Corporation. Double-pole trigger speed control switch. 4,241,297, Cl. 318-17.000.

Pickering, Norman C.; and Fisher, Yale, to Storz Instrument Company. Ophthalmic electromagnet. 4,240,410, Cl. 128-1.500.

Pierce, Robert B.; and Wilson, Robert B., to BLM Automatic Clutch Limited. Clutch and brake assembly. 4,240,535, Cl. 192-17.00C.

Pierzchala, Richard P.: *See—*
Tiede, Herbert R.; and Pierzchala, Richard P., 4,240,272, Cl. 62-457.000.

Pillsbury Company, The: *See—*
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Pirio, Marcel R.: *See—*
Singh, Prithipal; and Pirio, Marcel R., 4,241,177, Cl. 435-7.000.

Pitkjaan, Elam; and Endler, James F., to Westinghouse Electric Corp. Inner lamp-mount assembly for sealed-beam headlamp and similar lighting apparatus. 4,241,391, Cl. 362-267.000.

Pitney Bowes Inc.: *See—*
Allocca, Michael A., 4,241,405, Cl. 364-466.000.
Byrne, Leroy H.; and Fassman, Arnold, 4,241,247, Cl. 200-61.410.

Pivot Manufacturing Company: *See—*
Ernst, M. Eric, 4,240,571, Cl. 224-310.000.

Pizzini, Sergio: *See—*
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, 4,241,037, Cl. 423-348.000.

Plastik-und Metallverpackung GmbH: *See—*
Stelzner, Herbert A.; and Lau, Peter, 4,240,239, Cl. 53-398.000.

Plessey Handel und Investments AG: *See—*
Dickson, John F.; and Oakley, Raymond E., 4,241,424, Cl. 365-218.000.

Podgorski, Wojciech; and Stas, Justyn, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Device for mining of thick strata of useful minerals. 4,240,666, Cl. 299-31.000.

Pohlig, Dietmar, to Siemens Aktiengesellschaft. Circuit arrangement for the generation of stepping pulses for the acceleration of a stepper motor. 4,241,301, Cl. 318-696.000.

Poirier, Victor L.: *See—*
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., 4,240,409, Cl. 128-1.00D.

Polaroid Corporation: *See—*
Abbadessa, Joseph J.; and Johnson, Bruce K., 4,241,280, Cl. 315-151.000.
Clapp, Roger C.; and Choinski, Edward J., 4,241,171, Cl. 430-539.000.

Pole, Ernest G.; and Clark, Roy, to Polysar Limited. Latex-based adhesives. 4,240,860, Cl. 156-327.000.

Poluyanov, Anatoly F.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.

Polypur Forsaljnings AB: *See—*
Lind, John H., 4,240,164, Cl. 4-449.000.

Polysar Limited: *See—*
Pole, Ernest G.; and Clark, Roy, 4,240,860, Cl. 156-327.000.

Pool, Danny L., to Pool, Robert R. Attachment for liquid carrying container. 4,240,568, Cl. 222-189.000.

Pool, Robert R.: *See—*
Pool, Danny L., 4,240,568, Cl. 222-189.000.

Popov, Alexandr D.; and Solomin, Vladimir A. Linear induction motor. 4,241,268, Cl. 310-13.000.

Porep, Hans-Jurgen: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Post, Arnold R. Thermostatically controlled heating system. 4,240,579, Cl. 236-10.000.

Post Office, The: *See—*
Smart, Normaan E., 4,241,119, Cl. 428-36.000.

Postema, Pieter M., to ITT Industries, Inc. Low-wear shock absorber. 4,240,531, Cl. 188-315.000.

PPG Industries, Inc.: *See—*
Ammons, Vernon G., 4,241,140, Cl. 428-339.000.
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.
Sickles, James E., 4,240,585, Cl. 239-705.000.
Temple, Chester S., 4,240,944, Cl. 260-29.6NR.

Praamsma, Michael F., to Vivitar Corporation. Light mixing system for a photographic enlarger. 4,240,738, Cl. 355-1.000.

Prada, Luis E., to General Electric Company. Appliance door position sensor arrangement. 4,241,337, Cl. 340-547.000.

Pratt, Harry H.: *See—*
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-261.000.

Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., to Castall Incorporated. Insulating boards. 4,241,132, Cl. 428-285.000.

Presley, Pauline B.: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.

Priegnitz, James W., to UOP Inc. Process for the separation of orthochloronitrobenzene. 4,240,986, Cl. 568-937.000.

Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., to AGFA-GEVAERT N.V. Electrophotographic liquid developer comprising acrylic or methacrylic acid ester of hydrogenated abietyl alcohol polymer. 4,241,159, Cl. 430-114.000.

Prinz, Richard: *See—*
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,241,197, Cl. 525-309.000.

Pritchard, William F. Soap leaf dispenser. 4,240,564, Cl. 221-213.000.

Probe Systems, Incorporated: *See—*
Krasner, Norman F.; and Leiner, Barry M., 4,241,411, Cl. 364-726.000.

Procter & Gamble Company, The: *See—*
de Luque, Manuel J., 4,240,920, Cl. 252-99.000.
Volpenhein, Robert A.; and Jandacek, Ronald J., 4,241,054, Cl. 424-180.000.

Procyk, Frank J.: *See—*
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Champenois, Michel M. L., 4,240,959, Cl. 260-147.000.

Proll Molding Company: *See—*
Goldenberg, J. Melvyn, 4,240,321, Cl. 84-433.000.

Prontor-Werk Alfred Gauthier GmbH: *See—*
Wiedmann, Erwin; and Stacklies, Horst, 4,240,728, Cl. 354-38.000.

Proteus Corporation: *See—*
Inhofer, Harold G.; and Kriz, James J., Jr., 4,240,329, Cl. 91-342.000.

Puariea, Douglas A., to Maxson Corporation, The. Side dumping railroad car. 4,240,355, Cl. 105-273.000.

Pullman Incorporated: *See—*
Nagy, Ernest J., 4,240,356, Cl. 105-323.000.

Purification Sciences Inc.: *See—*
Lowther, Frank E., 4,240,381, Cl. 123-26.000.

Pustka, Marvin J., to Esquire, Inc. Lens closure for light fixture and method for attachment. 4,240,853, Cl. 156-108.000.

Quaker Oats Company, The: *See—*
Turk, Bartel G., 4,240,779, Cl. 425-313.000.

Quandt, Earl R.: *See—*
Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, 4,240,676, Cl. 308-9.000.

Quick, Marshall K., to General Electric Company. Sampled data filtering and multiplexing apparatus. 4,241,264, Cl. 307-221.00D.

Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, to General Electric Company. Process for isolating and purifying diphenol by-products. 4,240,968, Cl. 260-345.200.

R. D. Werner Co., Inc.: *See—*
Spear, Kenneth J.; and Shawkey, Donald L., 4,240,522, Cl. 182-105.000.

Rabinowitz, Mario: *See—*
Bahder, George; and Rabinowitz, Mario, 4,241,233, Cl. 174-15.00C.

Rader, Helmut, to Interfarm Corporation. Medicator construction. 4,240,465, Cl. 137-564.500.

Rakowsky, Edward L.; and Galowin, Lawrence S., to Singer Company, The. Heat pipe turbo generator. 4,240,257, Cl. 60-531.000.

Rando Machine Corporation: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Randoll, William M. Game-balloon launcher. 4,240,396, Cl. 124-17.000.

Raney, Meredith T., Jr., to Harris Corporation. Apparatus for generating displays of variable size characters. 4,241,340, Cl. 340-731.000.

Ranweiler, James G.: *See—*
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.

Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, to AGFA-Gevaert, A.G. Photographic copying machine with interchangeable format masks. 4,240,744, Cl. 355-74.000.

Rascher, Andreas; and Zbinden, Jurg. Pipe coupling. 4,240,655, Cl. 285-323.000.

Raschle, Josef, to Heberlein Maschinenfabrik AG. Devices for texturing yarns by imparting false twist by friction. 4,240,248, Cl. 57-338.000.

Rasheed, Khalid; and Warkentin, James D., to Ciba-Geigy Corporation. Biocidally-active 1,3-benzodithiole-2-thione compounds. 4,240,821, Cl. 71-90.000.

Rasmussen, Arne V. R.: *See—*
Lehmann, Kjeld; and Rasmussen, Arne V. R., 4,241,380, Cl. 361-383.000.

Rattray, Clarence G. Hydraulic log splitting attachment for a tractor. 4,240,476, Cl. 144-193.00A.

Ravallo, Robert J.: *See—*
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.
Raymond, Robert J. Vine crop harvester. 4,240,446, Cl. 130-30.00R.
Raytheon Company: *See—*
Manthei, Philip J., 4,240,277, Cl. 68-17.00A.
Seidel, Harry W., 4,240,397, Cl. 126-21.00R.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,241,265, Cl. 307-228.000.
Blatter, Harold; and Tults, Juri, 4,241,450, Cl. 455-182.000.
Bloom, Allen; and Burke, William J., 4,241,355, Cl. 346-135.100.
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.
Datta, Pabitra; and Friel, Ronald N., 4,241,120, Cl. 428-65.000.
David, John M., Jr., 4,240,594, Cl. 242-131.000.
Johnson, Henry C., 4,241,345, Cl. 343-5.0SW.
Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., 4,241,108, Cl. 427-162.000.
Reckitt & Colman Products Limited: *See—*
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.
Rector, Charles W. Frenum lock. 4,240,186, Cl. 27-21.000.
Reddy, Junuthula N., to Bendix Corporation, The. Speed sensitive electronic fuel control system for an internal combustion engine. 4,240,382, Cl. 123-485.000.
Reed, Harold L.: *See—*
Kayem, Douglas J.; and Reed, Harold L., 4,241,430, Cl. 367-115.000.
Reed International Limited: *See—*
Canning, Rodger G.; and Tomlinson, John P., 4,241,125, Cl. 428-158.000.
Reed, Robert D., to United States of America, National Aeronautics and Space Administration. Method for observing the features characterizing the surface of a land mass. 4,240,601, Cl. 244-160.000.
Reed, Ronald L., to Exxon Production Research Company. Simultaneous microemulsion-aqueous phase flooding process. 4,240,504, Cl. 166-273.000.
Reflectone, Inc.: *See—*
McCanney, Neil R., 4,241,235, Cl. 179-1.0SH.
Rega, John F., to Johnson & Johnson Baby Products Company. Apparatus for manufacturing a product having elastic means disposed in the transverse direction. 4,240,866, Cl. 156-496.000.
Regan, Michael T.: *See—*
Webster, Frank G.; and Regan, Michael T., 4,241,157, Cl. 430-41.000.
Regehr, Ulrich; Hannemann, Horst; and Speitkamp, Ludwig, to Regehr, Ulrich. Droplet separator. 4,240,814, Cl. 55-423.000.
Regie Nationale des Usines Renault: *See—*
Louviot, Jean F., 4,240,456, Cl. 137-100.000.
Regnault, Alain; and Sachetto, Jean-Pierre, to Battelle Memorial Institute. Feedstuff for livestock and manufacturing thereof. 4,241,089, Cl. 426-2.000.
Reid, Margaret P.: *See—*
Mag, Theodore K.; and Reid, Margaret P., 4,240,972, Cl. 260-424.000.
Reid, Terry A.: *See—*
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,240,899, Cl. 208-120.000.
Reinitz, Clayton W.: *See—*
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, 4,240,968, Cl. 260-345.200.
Reliable Electric Company: *See—*
Gilberts, Alexander G., 4,241,374, Cl. 361-124.000.
Renth, Ernst-Otto: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
Republic Steel Corporation: *See—*
Stanya, Andrew, 4,240,881, Cl. 204-28.000.
Research Corporation: *See—*
Gaafar, Hassan A., 4,241,045, Cl. 424-1.000.
Retzer, Erich, to Compur-Electronic Gesellschaft mit beschrankter Haftung. Test vessel. 4,240,749, Cl. 356-246.000.
Reuter, Wolfgang: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.
Rexnord Inc.: *See—*
Delmer, Philip T., 4,240,342, Cl. 100-53.000.
Reynolds Metals Company: *See—*
Wong, Lip F.; and Whiteman, Benton A., 4,240,652, Cl. 285-91.000.
Rhoades, James J., to Tapco Products Company, Inc. Sheet metal br 4,240,279, Cl. 72-319.000.
Rhone-Poulenc Industries: *See—*
Helgorsky, Jacques; and Leveque, Alain, 4,241,029, Cl. 423-112.000.
Lagasse, Alain; and Papillon, Bernard, 4,240,918, Cl. 252-95.000.
Riaboy, Florence. Nose and mouth filter combination. 4,240,420, Cl. 128-206.140.
Richard A. Shaw, Inc.: *See—*
Shaw, Richard A., 4,241,096, Cl. 426-484.000.
Ricoh Company, Ltd.: *See—*
Namiki, Ryoichi, 4,240,189, Cl. 29-157.30R.
Rideout, Vincent L.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.
Ridge, David N.: *See—*
Hanifin, John W.; and Ridge, David N., 4,241,077, Cl. 424-275.000.
Riediger, Craig W., to Caterpillar Tractor Co. Variable flow control valve for steering systems of articulated vehicles. 4,240,457, Cl. 137-101.000.
Ries, Karl: *See—*
Lather, Dieter; and Ries, Karl, 4,240,281, Cl. 73-1.0DV.
Rigaux, Guy: *See—*
Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, 4,241,262, Cl. 307-221.00D.
Riggs, Olen L., Jr., to Transworld Drilling Company. Apparatus for measuring internal metal stress. 4,240,892, Cl. 204-195.00F.
Rim, Yong S.: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,240,974, Cl. 260-456.00P.
Rivelli, Renato: *See—*
Fausone, Alfredo; and Rivelli, Renato, 4,241,320, Cl. 333-18.000.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., to SCM Corporation. Corrosion-resistant powder-metallurgy stainless steel powders and compacts therefrom. 4,240,831, Cl. 75-228.000.
Robert Bosch GmbH: *See—*
Breitling, Wolfram, 4,241,317, Cl. 331-65.000.
Brill, Klaus; and Grothe, Wolfgang, 4,241,356, Cl. 346-135.100.
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.
Kulke, Gunter, 4,240,385, Cl. 123-470.000.
Roberts Harvester, Inc.: *See—*
Rogers, William A., 4,240,175, Cl. 15-21.00E.
Roberts, Webster C.: *See—*
Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.
Robertshaw Controls Company: *See—*
Bauer, Werner R., 4,240,469, Cl. 137-625.660.
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., to Thermo Electron Corporation. Apparatus for assisting circulation of blood. 4,240,409, Cl. 128-1.00D.
Rockwell International Corporation: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.
Tracy, John M.; and Yeh, Pochi A., 4,240,696, Cl. 350-163.000.
Rockwool Aktiebolaget: *See—*
Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, 4,240,815, Cl. 65-2.000.
Rodgers, David P.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.
Roeschlaub, John G.: *See—*
McKinley, John R.; and Roeschlaub, John G., 4,241,102, Cl. 209-3.100.
Rogers, William A., to Roberts Harvester, Inc. Apparatus for washing the interior of a freight container. 4,240,175, Cl. 15-21.00E.
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., to Allied Chemical Corporation. Cyclic ketals of α-oximino-cycloalkanones. 4,240,966, Cl. 260-340.50R.
Rohm GmbH: *See—*
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.
Rohm, Gunter H. Force-compensated split-jaw lathe chuck. 4,240,645, Cl. 279-1.00C.
Rohm and Haas Company: *See—*
Kilbourn, Edward E.; and Weir, W. David, 4,241,079, Cl. 424-285.000.
Manziek, Larry, 4,240,909, Cl. 210-688.000.
Miller, George A.; and Weiler, Ernest D., 4,241,214, Cl. 548-101.000.
Rohner, Peter, to Kabel- und Metallwerke Gutehoffnungshuette AG. Heat exchange apparatus. 4,240,500, Cl. 165-105.000.
Rolfo, Gian P.: *See—*
Denaldi, Ermanno; and Rolfo, Gian P., 4,240,305, Cl. 74-493.000.
Rolke, Dietrich: *See—*
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.
Rollins, Lester G., to Joy Manufacturing Company. Mining cutter bit holder and mounting assemblies. 4,240,669, Cl. 299-86.000.
Rolls-Royce Limited: *See—*
Douglas, Joseph, 4,240,706, Cl. 350-286.000.
Roman, Steven A., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,241,081, Cl. 424-304.000.
Roos, Kjell E. H. Patient transferring apparatus. 4,240,169, Cl. 5-60.000.
Rosan, Inc.: *See—*
Rosan, Jose, Jr., 4,240,393, Cl. 123-188.0GC.
Rosan, Jose, Jr., to Rosan, Inc. Self locking valve guide. 4,240,393, Cl. 123-188.0GC.
Rosenthaler, Harold B. Dental appliance. 4,240,789, Cl. 433-136.000.
Ross, William J.: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Rossi, Albert, to Exxon Research & Engineering Co. Pour point depressant additive for fuels and lubricants. 4,240,916, Cl. 252-56.00D.

Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, to Schering Aktiengesellschaft. Apparatus for the inhalation of medicinal agents. 4,240,418, Cl. 128-203.150.

Roth, Edmund H. Socket wrench. 4,240,310, Cl. 81-57.290.

Roth, Jonathan N., to Conviron, Inc. Pectin culture media and method. 4,241,186, Cl. 435-243.000.

Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, to Saint-Gobain Industries. Apparatus for transporting sheets of glass in a vertical position. 4,240,660, Cl. 294-81.00R.

Rothman, Steven H.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Rothschild, Kenneth J.; and Clark, Noel A., to Boston University, The Trustees of. Process for producing a molecularly oriented film. 4,241,005, Cl. 264-311.000.

Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Loom back rest mechanism. 4,240,471, Cl. 139-114.000.

Roussin, Michael A., to Caterpillar Tractor Co. Belleville spring-loaded crescent seal. 4,240,642, Cl. 277-84.000.

Rovnjev, Vjatsjeslev, to AB Bates a/s. Process for making color separation negatives and positives for use in multi-color printing. 4,241,153, Cl. 430-4.000.

Roy, Michel, to LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance. Apparatus for forming and strapping a pack. 4,240,340, Cl. 100-7.000.

Rubell, Rube I.: *See—*
Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I., 4,240,544, Cl. 206-0.820.

Rubinstein, Sara: *See—*
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.

Rudd, Wallace C.; and Udall, Humfrey N., to Thermatool Corporation. Electrical contact apparatus for high frequency welding. 4,241,284, Cl. 219-61.200.

Rudman, Christopher G.: *See—*
Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G., 4,241,051, Cl. 424-177.000.

Ruggles, Richard L., to Clemar Manufacturing Corp. Sequential irrigation control system. 4,241,375, Cl. 361-166.000.

Russo, Andrew N. Retrieving apparatus for tethered sports missile. 4,240,592, Cl. 242-54.00R.

Rutishauser, Albert. Mechanism for transporting sheetlike recording carriers. 4,240,622, Cl. 271-126.000.

Rutkowski, Gerhard: *See—*
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.

Rutz, William D.: *See—*
Swain, Robert J.; and Rutz, William D., 4,240,908, Cl. 252-325.000.

Ryerson, John D., to Energy for Independence, Inc. Sensing the presence of ozone. 4,240,799, Cl. 23-232.00E.

Rylander, Nicholas M. Stuffing gland. 4,240,675, Cl. 308-9.000.

S & C Electric Company: *See—*
Bernatt, Joseph, 4,241,248, Cl. 200-145.000.

S. C. Johnson & Son, Inc.: *See—*
Chapman, Francis E., 4,240,919, Cl. 252-95.000.
Dill, Douglas W., 4,241,141, Cl. 428-500.000.

Saab-Scania Aktiebolag: *See—*
Horn, James N.; and Garden, Lorne J., 4,240,477, Cl. 144-245.00R.

Sachetto, Jean-Pierre: *See—*
Regnault, Alain; and Sachetto, Jean-Pierre, 4,241,089, Cl. 426-2.000.

Safrygin, Jury S.: *See—*
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K., 4,240,818, Cl. 71-59.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Hamsag, Ernest E., 4,240,197, Cl. 29-623.200.

Sage, Howard A., to Truck-Lite Company, Inc. Single filament, dual function, vehicle signal lamp. 4,241,371, Cl. 362-61.000.

Saino, Tetsushi: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.

St. Germain, Dennis, to I & I Sling Company, Inc. Heavy duty sling construction. 4,240,659, Cl. 294-74.000.

Saint-Gobain Industries: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.

Saito, Hiroki: *See—*
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.

Saito, Masaaki: *See—*
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.

Saito, Tsunayoshi: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Sakai, Masayuki: *See—*
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.

Sakai, Nobuo: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.

Sakaki, Hiroshi; and Shintani, Sotokichi, to Kokusai Denshin Denwa Co., Ltd. Apparatus for reducing a sampling frequency. 4,241,443, Cl. 370-70.000.

Sakamoto, Takao: *See—*
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.

Sakaoka, Gouji: *See—*
Matsumoto, Kenji; and Sakaoka, Gouji, 4,240,759, Cl. 401-85.000.

Saleck, Wilhelm; and von Rintelen, Harald, to AGFA-Gevaert, A.G. Process for the preparation of silver halide emulsions. 4,241,173, Cl. 430-569.000.

Salvat, Francois; Bouko, Jean; and Coquio, Claude, to Thomson-CSF. Multimode monopulse feed and antenna incorporating same. 4,241,353, Cl. 343-786.000.

Salvatore, Amedeo: *See—*
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.

Samejima, Yasushi: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Sammells, Anthony F.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,240,882, Cl. 204-75.000.

Sanborn, Philip A., Jr., to W. R. Grace & Co. Method and apparatus for making a reclosable package. 4,240,241, Cl. 53-412.000.

Sanders Associates, Inc.: *See—*
Kreick, John R.; and Anderson, Glenn A., Sr., 4,241,292, Cl. 219-541.000.

Sanders, Gloria L. Safety device for forklifts and the like. 4,240,526, Cl. 187-9.00R.

Sanders, Heinz; and Langmann, Horst. Stackable flat pallet. 4,240,360, Cl. 108-53.300.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,240,276, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Seal device. 4,240,276, Cl. 68-5.00E.

Sandstrom, Paul H.: *See—*
Lal, Joginder; and Sandstrom, Paul H., 4,240,487, Cl. 152-355.000.

Saner, Kaspar, to Wirth Gallo & Co. Mass and force meter. 4,240,289, Cl. 73-141.00R.

Sankyo Company Limited: *See—*
Baba, Yoshihiko; and Horikoshi, Hiroyoshi, 4,241,082, Cl. 424-309.000.
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

San Miguel, Anthony, to United States of America, Navy. Safe-arm device for directed warhead. 4,240,351, Cl. 102-262.000.

Sano, Fumio: *See—*
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Iwao, Jun-ichi; and Iso, Tadashi, 4,241,086, Cl. 424-319.000.

Sapino, Chester: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Sargisson, Donald F.; and Harris, Vivian G., to General Electric Company. Acoustically-treated mixer for a mixed flow gas turbine engine. 4,240,252, Cl. 60-262.000.

Sarle, Charles R.; and Owen, Bruce R., to Wallace Murray Corporation. Non-rotating fluid damped combination thrust and journal bearing. 4,240,678, Cl. 308-121.000.

Sarmurzina, Raushan G.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Sartain, Don M. Corner guard. 4,240,225, Cl. 49-462.000.

Sartori, Guido; and Savage, David W., to Exxon Research & Engineering Co. Process and amine-solvent absorbent for removing acidic gases from gaseous mixtures. 4,240,922, Cl. 252-189.000.

Sartori, Guido; and Leder, Frederic, to Exxon Research & Engineering Co. Process and amine-solvent absorbent for removing acidic gases from gaseous mixtures. 4,240,923, Cl. 252-189.000.

Sasaki, Takashi: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Sasakura, Kazuyuki: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.

Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, to Tokai Denka Kogyo Kabushiki Kaisha. Dyeing method for fibrous products. 4,240,791, Cl. 8-465.000.

Sato, Seiji: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, to Canon Kabushiki Kaisha. Zoom lens having extended focusing range. 4,240,699, Cl. 350-184.000.

Sato, Yasuhisa: *See—*
Tsuji, Sadahiko; and Sato, Yasuhisa, 4,240,698, Cl. 350-184.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Ink supply devices for portable labeling machine. 4,240,348, Cl. 101-295.000.

Sauerwein, William D.: *See—*
Walton, Richard E., II; and Sauerwein, William D., 4,240,204, Cl. 30-393.000.

Saunders, Howard E.; and Smith, James D. B., to Westinghouse Electric Corp. Low dissipation factor epoxy coating powder. 4,241,101, Cl. 427-32.000.

Sauvan, Gerard: *See—*
Vial, Jean; and Sauvan, Gerard, 4,240,453, Cl. 134-107.000.

Savage, David W.: *See—*
Sartori, Guido; and Savage, David W., 4,240,922, Cl. 252-189.000.

Sawby, Scott; and Mullin, Steven W. Folding knife. 4,240,201, Cl. 30-161.000.

SCA Development Aktiebolag: *See—*
Gustafson, Karl A., 4,240,260, Cl. 60-670.000.

Scaccia, Carl, to Union Carbide Corporation. High solids mixture aeration method. 4,240,905, Cl. 210-629.000.

Scarpitti, Janice K.: *See—*
Scarpitti, Roger V., 4,241,241, Cl. 179-100.41Z.

Scarpitti, Roger V., to Scarpitti, Janice K. Electromechanical record disk dynamic range expander. 4,241,241, Cl. 179-100.41Z.

Schaaf, Henry W.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., to National Union Electric Corporation. Vacuum cleaner bag assembly. 4,240,812, Cl. 55-369.000.

Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Peritoneal dialysis apparatus. 4,240,408, Cl. 128-1.00R.

Schauer, Alois: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Schechter, Michale M.: *See—*
Simko, Aladar O.; and Schechter, Michale M., 4,240,395, Cl. 123-445.000.

Scheffer, Terry J.: *See—*
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.

Schering Aktiengesellschaft: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Scheuermann, Horst: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.

Schiffer, Daniel K.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

Schimko, Reinhold, to Universal Maschinenfabrik Dr. Rudolf Scheiber GmbH & Co. KG. Reciprocating sled drive for a flat bed knitting machine. 4,240,274, Cl. 66-64.000.

Schink, Richard R., to Milwaukee Cylinder Corporation. Combined pressure control and shut-off valve. 4,240,464, Cl. 137-505.420.

Schleffendorf, Frank. Tool handle. 4,240,479, Cl. 145-61.00D.

Schmatz, Duane J.; and Winterbottom, Walter L., to Ford Motor Company. Fluxless brazing of aluminum in inert gas. 4,240,574, Cl. 228-217.000.

Schmid, Hans-Peter: *See—*
Winderman, Jay B.; and Schmid, Hans-Peter, 4,240,596, Cl. 244-3.160.

Schmidt, Alfred: *See—*
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.

Schmidt, Gunther: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.

Schmit, Georges J. E.; and Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Stretchable radial spare tire. 4,240,486, Cl. 152-330.00R.

Schmitt, Frederick L.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

Schnell, Karl. Mincer with at least one rotary mincing tool. 4,240,591, Cl. 241-82.400.

Schnoll, Howard S., to Singer Company, The. Free oil control in a gyro bearing design. 4,240,679, Cl. 308-187.000.

Schnurle, Hans: *See—*
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.

Schoenfield, Palmer J.: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.

Schoer, Heinz; and Schultze, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Composite aluminum-containing workpieces. 4,241,148, Cl. 428-654.000.

Schonken, Tobias D., to Multilin Inc. Method and apparatus for monitoring poly-phase currents in poly-phase equipment. 4,241,336, Cl. 340-518.000.

Schoppee, Meredith M.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

Schrank, Wolfgang: *See—*
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Schreiber, John A.: *See—*
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.

Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, to Boehringer Ingelheim GmbH. 2-(Pyridylamino)-benzoic acids and salts thereof. 4,241,068, Cl. 424-263.000.

Schroter, Herbert, to Hoechst Aktiengesellschaft. Developing apparatus for diazotype material, especially for use in a photoprinting machine. 4,240,736, Cl. 354-299.000.

Schroyer, Robert F. Method and device for removing disc brake piston. 4,240,191, Cl. 29-426.500.

Schubart, Rudiger, to Bayer Aktiengesellschaft. Monohalogenated ketones. 4,240,983, Cl. 568-316.000.

Schuerman, Terry J.: *See—*
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.

Schuette, William L.: *See—*
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,240,899, Cl. 208-120.000.

Schulte, Wolfgang: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.

Schultz, John P., to Vapor Corporation. Method for automated analysis of vehicle performance. 4,241,403, Cl. 364-300.000.

Schultze, W. Martin: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Schultze, Werner: *See—*
Schoer, Heinz; and Schultze, Werner, 4,241,148, Cl. 428-654.000.

Schulz, Manfred, to Dresser Europe S.A. Safety mounting device for the nozzle of a liquid-fuel dispensing pump. 4,240,475, Cl. 141-392.000.

Schwarz, Helmut: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Schwob, Pierre, to SEB S.A. Electric steam iron. 4,240,217, Cl. 38-77.830.

SCM Corporation: *See—*
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.
Moskowitz, Larry N.; and Klar, Erhard, 4,240,824, Cl. 75-0.50C.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,240,831, Cl. 75-228.000.
Woo, James T. K., 4,241,200, Cl. 525-455.000.

Scope, Inc.: *See—*
Uffelman, Malcolm R., 4,241,350, Cl. 343-5.0SA.

Scott, Donald C. Combined drum-set carrier and performance platform. 4,240,646, Cl. 280-30.000.

Scott, Jeffrey L.: *See—*
Thiem, James F.; and Scott, Jeffrey L., 4,240,174, Cl. 15-1.700.

Scrine, Gerald R.; and Carter, William D. M., to Shipowners Refrigerated Cargo Research Association. Apportioning means for refrigeration system. 4,240,266, Cl. 62-196.00B.

Sears, Kay G., to Entron, Inc. Power supply protective circuit. 4,241,372, Cl. 361-72.000.

SEB S.A.: *See—*
Schwob, Pierre, 4,240,217, Cl. 38-77.830.

Sederquist, Richard A., to United Technologies Corporation. Process for producing hydrogen containing gas. 4,240,805, Cl. 48-214.00R.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, to Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag". Driving gear rack cleaner for a mining machine. 4,240,667, Cl. 299-43.000.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Driving device for mining machine. 4,240,668, Cl. 299-43.000.

Seidel, Harry W., to Raytheon Company. Fuel saver oven. 4,240,397, Cl. 126-21.00R.

Seidel, John G.: *See—*
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., 4,240,992, Cl. 264-21.000.

Seidel, Peter-Rudolf: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Seiko Koki Kabushiki Kaisha: *See—*
Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,240,732, Cl. 354-138.000.

Seiner, Jerome A.: *See—*
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.

Semenov, Stepan S.; and Pevzner, Volf S. Programmed switching device. 4,241,245, Cl. 200-38.00R.

Senet, Jean-Pierre G.; and Le Roy, Patrice M., to Societe Nationale des Poudres et Explosifs. Allyl-acrylic monomers, their preparation and polymers derived therefrom. 4,241,202, Cl. 526-73.000.

Senko Medical Instruments Mfg. Co., Ltd.: *See—*
Nakanishi, Hikaru, 4,240,796, Cl. 8-137.500.

Sereg: *See*—
Nguyen, Van L., 4,240,284, Cl. 73-17.00A.
Shackelford, Carl L., to Altex Scientific, Inc. Needle injection device for delivering fluid. 4,240,429, Cl. 128-218.0NV.
Shakhpazov, Khristofor S.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Sharapov, Jury N.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Sharon Manufacturing Company: *See*—
Hudson, Sharon J., Jr., 4,240,573, Cl. 228-184.000.
Sharp Kabushiki Kaisha: *See*—
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.
Shaub, Melvin H., to Armstrong Cork Company. Humidifier. 4,240,991, Cl. 261-92.000.
Shaw, Bon F.: *See*—
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.
Shaw, Harold L., to Coca-Cola Company, The. System for vaporizing carbon dioxide utilizing the heat by-product of the refrigeration system as a heat source. 4,240,267, Cl. 62-238.00E.
Shaw, Richard A., to Richard A. Shaw, Inc. Method for coring cauliflower heads. 4,241,096, Cl. 426-484.000.
Shawkey, Donald L.: *See*—
Spear, Kenneth J.; and Shawkey, Donald L., 4,240,522, Cl. 182-105.000.
Shea, John W. Travel mirror. 4,241,383, Cl. 362-135.000.
Sheldon, Neville M.; and Stern, Alfred, to General Foam Products Limited. Wear-resistant flexible sheet material and a method for its manufacture. 4,241,189, Cl. 521-50.000.
Shell Container Systems: *See*—
Cohen, Joel B., 4,240,240, Cl. 53-410.000.
Shell Oil Company: *See*—
Berni, Albert J.; and Parrish, John F., 4,241,428, Cl. 367-21.000.
Kok, Riekert, 4,240,981, Cl. 564-259.000.
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.
Roman, Steven A., 4,241,081, Cl. 424-304.000.
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. Aldehyde synthesis. 4,240,985, Cl. 568-483.000.
Sherex Chemical Company, Inc.: *See*—
Shields, Theodore C., 4,240,804, Cl. 44-71.000.
Sherrill, John C. Pool vacuum. 4,240,173, Cl. 15-1.700.
Sherwood, Bert J.: *See*—
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.
Sherwood, William G.: *See*—
Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, 4,240,886, Cl. 204-112.000.
Shiba, Keisuke: *See*—
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, to Nakano Vinegar Co., Ltd. Method for preventing soy sauce from putrefaction. 4,241,095, Cl. 426-335.000.
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, to Shiraishi Kogyo Kaisha, Ltd. Filled paper. 4,240,870, Cl. 162-181.00A.
Shibuya Kogyo Co., Ltd.: *See*—
Nagano, Yasuaki, 4,240,868, Cl. 156-572.000.
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, to Kabushiki Kaisha Daini Seikosha. Stepping motor mechanism for an electronic watch. 4,241,434, Cl. 368-85.000.
Shida, Masaharu: *See*—
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.
Shields, Theodore C., to Sherex Chemical Company, Inc. Alkyl acrylate adducts of polyamines, ether amines and ether polyamines. 4,240,804, Cl. 44-71.000.
Shiga, Takashi, to Victor Company of Japan Limited. Program-selecting device in a reproducing apparatus. 4,241,364, Cl. 360-72.100.
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, to Hitachi, Ltd. Optical information recording apparatus. 4,241,240, Cl. 179-100.10G.
Shigemura, Yukimasa: *See*—
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
Shih, Seng C. Non-woven netting. 4,241,123, Cl. 428-105.000.
Shimada, Tatsuro: *See*—
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.
Shimano Industrial Company, Limited: *See*—
Fukui, Seiji, 4,240,533, Cl. 192-6.00A.
Shimaoka, Goro: *See*—
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,241,116, Cl. 427-386.000.
Shimazaki, Ruji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control device for an internal combustion engine. 4,240,389, Cl. 123-492.000.
Shimizu, Toru: *See*—
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.
Shinagawa Refractories Co., Ltd.: *See*—
Naito, Kiyoshi; and Syukuya, Akio, 4,240,788, Cl. 432-136.000.
Shinko Electric Co., Ltd.: *See*—
Ishiyama, Kiyoshige, 4,240,862, Cl. 156-350.000.
Shinma, Yasuhiro: *See*—
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Shinn, William T., to Motorola, Inc. Quartz crystal resonator. 4,240,311, Cl. 82-12.000.
Shintaku, Yoshishige, to Ibuki Kogyo Co., Ltd. Electric horn with twin driving electromagnets. 4,241,334, Cl. 340-388.000.
Shintani, Sotokichi: *See*—
Sakaki, Hiroshi; and Shintani, Sotokichi, 4,241,443, Cl. 370-70.000.
Shionogi & Co., Ltd.: *See*—
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.
Shioume, Satoshi: *See*—
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Shipowners Refrigerated Cargo Research Association: *See*—
Scrine, Gerald R.; and Carter, William D. M., 4,240,266, Cl. 62-196.00B.
Shirahata, Kunikatsu: *See*—
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.
Shiraishi Kogyo Kaisha, Ltd.: *See*—
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.
Shiraki, Shigemi: *See*—
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
Shirakura, Hiroshi: *See*—
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Shirk, Albert: *See*—
Hintze, William; and Shirk, Albert, 4,241,277, Cl. 313-500.000.
Shoshiashvili, David S.: *See*—
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.
Shreve, James S., to United States of America, Army. Array antenna controller. 4,241,351, Cl. 343-100.0SA.
Shtykh, Nikolai P.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Shukla, Jayendra R., to Velsicol Chemical Corporation. Novel intumescent composition. 4,241,145, Cl. 428-537.000.
Shults, Mark C.: *See*—
Updike, Stuart J.; and Shults, Mark C., 4,240,438, Cl. 128-635.000.
Shuster, Edward J.: *See*—
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Sickler, Raymond W., to Dura-Bilt Products, Inc. Fence post with invertible sections. 4,240,615, Cl. 256-60.000.
Sickles, James E., to PPG Industries, Inc. Electrostatic spraying apparatus with repelling electrode means and gas shroud. 4,240,585, Cl. 239-705.000.
Siemens Aktiengesellschaft: *See*—
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.
Diepers, Heinrich, 4,240,869, Cl. 156-643.000.
Feuerbaum, Hans P.; and Otto, Johann, 4,241,259, Cl. 250-457.000.
Giebler, Fritz; and Gensthaler, Edmund, 4,241,333, Cl. 340-365.00S.
Gruter, Otto, 4,241,422, Cl. 365-183.000.
Haeder, Wolfgang, 4,241,234, Cl. 174-92.000.
Olsen, Willi, 4,241,379, Cl. 361-335.000.
Pauly, Alexander, 4,241,417, Cl. 364-900.000.
Pohlig, Dietmar, 4,241,301, Cl. 318-696.000.
Taeuber, Reinhard; and Neumayr, Hans, 4,241,331, Cl. 340-167.00R.
Siemens Gammasonics, Inc.: *See*—
Groch, Mark W.; and Lewis, George K., 4,240,440, Cl. 128-654.000.
Sigle, Jakob: *See*—
Sigle, Rolf; and Sigle, Jakob, 4,240,214, Cl. 36-30.00R.
Sigle, Rolf; and Sigle, Jakob. Foot-supporting sole. 4,240,214, Cl. 36-30.00R.
Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
deWitt, Paolo; and Tinti, Maria O., 4,240,984, Cl. 568-435.000.

Silberberg, Joseph: *See—*
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.

Silukova, Irina F.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Silvestri, Herbert H.: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Simko, Aladar O.; and Schechter, Michale M., to Ford Motor Company. Air/fuel ratio controller. 4,240,395, Cl. 123-445.000.

Simmonds Precision Products, Inc.: *See—*
Bentz, Allan J., 4,240,286, Cl. 73-59.000.

Simmonds, Robin G.: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Simonis, Jurgen, to Gebruder Welger. Bale pressing arrangement for cardboard wastes. 4,240,339, Cl. 100-5.000.

Singer Company, The: *See—*
Adams, Kenneth D., 4,240,368, Cl. 112-220.000.
Rakowsky, Edward L.; and Galowin, Lawrence S., 4,240,257, Cl. 60-531.000.
Schnoll, Howard S., 4,240,679, Cl. 308-187.000.

Singh, Prithipal; and Pirio, Marcel R., to Syva Company. Propanolol antigen conjugates and antibodies. 4,241,177, Cl. 435-7.000.

Singh, Shobha: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., 4,240,693, Cl. 350-96.140.

Singleton, Rosa R. Therapeutic cold pack. 4,240,436, Cl. 128-403.000.

Sinha, Ashok K.: *See—*
Jacobs, Richard M.; and Sinha, Ashok K., 4,240,196, Cl. 29-578.000.

Sion, Marcel-Xavier: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Sipek, Ladislav: *See—*
Wendelin, Rurik; and Sipek, Ladislav, 4,240,798, Cl. 23-230.00A.

Siragusa, George A.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.

Sivachenko, Eugene W.; and Broacha, Firoze H., to Sivachenko, Eugene W. Corrugated plate having variable material thickness and method for making same. 4,241,146, Cl. 428-600.000.

Sjoholm, Bertil H., to Gotaverken Anteknik AB. Apparatus for welding pins to a tube interior. 4,241,287, Cl. 219-161.000.

Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., to Albany International Corp. Tennis balls and method of manufacture. 4,241,118, Cl. 428-35.000.

SKF Industries, Inc.: *See—*
Stolz, Robert; and Hahn, Walter, 4,240,681, Cl. 308-189.00R.

SKF Kugellagerfabriken GmbH: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.

Skinner, Maurice W.: *See—*
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.

Skrzec, Adam E., to Stauffer Chemical Company. Fluidized bed reactor system. 4,241,021, Cl. 422-143.000.

Skwarek, Jean P., to Timex Corporation. Substrate board/carrier frame assembly. 4,241,439, Cl. 368-204.000.

Slagle, Bernie L. Water injection system. 4,240,380, Cl. 123-25.00L.

SM Industrial Company, Limited: *See—*
Miki, Kiyotsune, 4,240,178, Cl. 16-93.00D.

Smart, Normaan E., to Post Office, The. Dimensionally heat-unstable products. 4,241,119, Cl. 428-36.000.

Smith, Barry. Reflector with illuminated indicia. 4,240,220, Cl. 40-564.000.

Smith International, Inc.: *See—*
Crase, Gary M., 4,240,683, Cl. 308-227.000.

Smith, James D. B.: *See—*
Phillips, David C.; and Smith, James D. B., 4,241,195, Cl. 525-3.000.
Saunders, Howard E.; and Smith, James D. B., 4,241,101, Cl. 427-32.000.

Smith, Ruslon J., to Equipment Technology Incorporated. High speed unit printer and inker therefor. 4,240,344, Cl. 101-44.000.

Smith, Stanley E., to General Motors Corporation. Automatic sewing apparatus for air cushions. 4,240,366, Cl. 112-121.240.

Smith & Wesson Chemical Company, Inc.: *See—*
Litman, Alan, 4,241,252, Cl. 250-213.0VT.

Smith, William G.; and Yuhash, Ladd, to United States of America, Army. Automatic gun. 4,240,324, Cl. 89-156.000.

Smith, William P.; and Halsey, Dave R. Traffic delineator. 4,240,766, Cl. 404-10.000.

Smith, William R.: *See—*
Blanc, Serge L.; and Smith, William R., 4,240,748, Cl. 356-138.000.

Smithen, Carey E., to Hoffmann-La Roche Inc. Nitroimidazoles and compositions thereof. 4,241,060, Cl. 424-248.570.

Smyshlyaev, Vladimir V.: *See—*
Zalessky, Eduard A.; and Smyshlyaev, Vladimir V., 4,240,292, Cl. 73-861.270.

Snell, James L.; and Cobb, Raymond F., to Harris Corporation. Hard limiting acquisition technique for PSK carrier detector. 4,241,454, Cl. 455-260.000.

SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Zoina, Giuseppe, 4,240,188, Cl. 28-274.000.

Snyder, Peter E.: *See—*
Virgulto, James A.; and Snyder, Peter E., 4,240,444, Cl. 128-782.000.

Societe Anonyme de Telecommunications: *See—*
Payen, Georges A., 4,241,445, Cl. 371-5.000.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Societe d'Applications Generales d'Electricite et de Mecanique SAGEM: *See—*
Vial, Jean; and Sauvan, Gerard, 4,240,453, Cl. 134-107.000.

Societe d'Exploitation des Etablissements Bregeon-Cochard: *See—*
Diziere, Bernard, 4,241,384, Cl. 362-203.000.

Societe Nationale des Poudres et Explosifs: *See—*
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,241,202, Cl. 526-73.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.

Soderman, Donald A.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Soejima, Shigeo: *See—*
Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, 4,240,890, Cl. 204-195.00S.

Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K. Procedure for preparing nitrogen-potassium fertilizer. 4,240,818, Cl. 71-59.000.

Sokolow, Nickolas N., to Beloit Corporation. Parison pickers with variable spacing. 4,241,009, Cl. 264-532.000.

Solar Kinetics, Inc.: *See—*
Hutchison, Joseph A., 4,240,406, Cl. 126-438.000.

Solarex Corporation: *See—*
Lindmayer, Joseph, 4,240,842, Cl. 136-256.000.

Solberg, Ruell F., Jr.: *See—*
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; and Solomin, Vladimir A., 4,241,268, Cl. 310-13.000.

Somesla, Dana W.: *See—*
Gomberg, Edward N.; and Somesla, Dana W., 4,240,852, Cl. 156-96.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Unsymmetrical pyrrolino benzyl quaternary compounds. 4,240,965, Cl. 260-326.410.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,209, Cl. 546-147.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,210, Cl. 546-261.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,211, Cl. 546-261.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,212, Cl. 546-291.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,218, Cl. 560-163.000.

Song, Jae M.; and Ligon, Samuel B. Tetherable game ball. 4,240,629, Cl. 273-58.00C.

Sony Corporation: *See—*
Kimura, Shuichi, 4,240,641, Cl. 274-23.00R.
Kobayashi, Naotake, 4,241,198, Cl. 525-360.000.

Sookikian, Dennis M.; and Gudea, Dumitru, to Triner Scale and Manufacturing Co. Electronic scale. 4,241,407, Cl. 364-567.000.

Sotolongo, Thomas J., to AMP Incorporated. Floor fixture. 4,240,688, Cl. 339-122.00F.

Sotolongo, Thomas J.: *See—*
Bunnell, Edward D.; and Sotolongo, Thomas J., 4,240,687, Cl. 339-99.00R.

Soupios, Charles C. Electric guitars. 4,240,319, Cl. 84-263.000.

Spear, Kenneth J.; and Shawkey, Donald L., to R. D. Werner Co., Inc. Extension trestle ladder. 4,240,522, Cl. 182-105.000.

Spector, George: *See—*
LaGrone, Janet L.; and Spector, George, 4,240,520, Cl. 182-48.000.
Nevin, William; and Spector, George, 4,240,783, Cl. 431-253.000.

Speidel, Blasius. Pressure gauge for sphygmomanometers. 4,240,297, Cl. 73-711.000.

Speitkamp, Ludwig: *See—*
Regehr, Ulrich; Hannemann, Horst; and Speitkamp, Ludwig, 4,240,814, Cl. 55-423.000.

Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, to Spence-Bate, Harry Arthur Hele. Electrostatic camera. 4,240,725, Cl. 354-3.000.

Spence-Bate, Harry Arthur Hele: *See—*
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, 4,240,725, Cl. 354-3.000.

Spencer, Donald L., to University of Iowa Research Foundation. Solar absorber panel, collector assembly and installation method. 4,240,407, Cl. 126-444.000.

Sperry Corporation: *See*—
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.
Eibner, Jules A., 4,241,455, Cl. 455-600.000.

Spiegelberg, Gary: *See*—
Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, 4,241,285, Cl. 219-130.320.

Spirig, Ernst. Ambient noise intruder alarm. 4,241,338, Cl. 340-566.000.

Sprague, Peter W.: *See*—
Ondetti, Miguel A.; and Sprague, Peter W., 4,241,076, Cl. 424-274.000.

Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use of benzodionones in augmenting or enhancing the aroma and taste of a foodstuff. 4,241,097, Cl. 426-536.000.

Sprengel, Heide: *See*—
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.

Sprimag Spritzmaschinenbau GmbH: *See*—
Anger, Rudolf, 4,240,373, Cl. 118-301.000.

Srinivas, Srivas R. Apparatus for cleaning and coating capillary tubes useful in gas chromatography. 4,240,472, Cl. 141-59.000.

Staats, Henry N., to General Binding Corporation. Method for producing a transversely curved finger binding. 4,241,006, Cl. 264-322.000.

Stabilus GmbH: *See*—
Wirges, Winfried; and Bauschke, Guenter, 4,240,619, Cl. 267-65.00R.

Stacey, Eric. J.; and Kernick, Andress, to Westinghouse Electric Corp. Non-dissipative DC active filter and transformer. 4,241,395, Cl. 363-39.000.

Stacklies, Horst: *See*—
Wiedmann, Erwin; and Stacklies, Horst, 4,240,728, Cl. 354-38.000.

Staffieri, Giovanni M. Stereoscopic camera. 4,240,731, Cl. 354-114.000.

Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, to Carl Still GmbH & Co. KG, Firma. Method for preheating coal for coking. 4,240,877, Cl. 201-41.000.

Stahnecker, Erhard: *See*—
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.

Staiger, Donald W.: *See*—
Flickinger, William T.; and Staiger, Donald W., 4,240,781, Cl. 425-450.100.

Stamicarbon, B.V.: *See*—
Dassen, Bernardus H. N., 4,240,904, Cl. 210-609.000.

Stamires, Dennis: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,240,932, Cl. 252-455.00Z.

Standard Brands Incorporated: *See*—
Tims, Orinda L., 4,241,106, Cl. 426-138.000.

Standard Oil Company: *See*—
Milberger, Ernest C.; and Wong, Eunice K. T., 4,240,931, Cl. 252-438.000.

Standard Oil Company (Indiana): *See*—
Knox, Jack R., 4,241,002, Cl. 264-168.000.
Mieville, Rodney L., 4,240,934, Cl. 252-466.0PT.

Standing, Charles N.: *See*—
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Stanley, Philip E., to Honeywell Information Systems Inc. Clock system having a dynamically selectable clock period. 4,241,418, Cl. 364-900.000.

Stanley Tools Limited: *See*—
Gilbert, Richard, 4,240,202, Cl. 30-162.000.

Stanya, Andrew, to Republic Steel Corporation. Electroplating current control. 4,240,881, Cl. 204-28.000.

Starchenko, Vitaly S.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Starr, Darrel N., to Caterpillar Tractor Co. Safety guard for work platforms. 4,240,648, Cl. 280-760.000.

Stas, Justyn: *See*—
Podgorski, Wojciech; and Stas, Justyn, 4,240,666, Cl. 299-31.000.

Staudenmaier, Paul: *See*—
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,240,743, Cl. 355-73.000.

Stauffer Chemical Company: *See*—
Goswami, Jagadish C., 4,241,192, Cl. 521-73.000.
Kaniecki, Thaddeus J., 4,240,921, Cl. 252-156.000.
Skrzec, Adam E., 4,241,021, Cl. 422-143.000.
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.

Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, to Bayer Aktiengesellschaft. Graft copolymers containing (meth)acrylic acid or (meth)acrylic acid esters. 4,241,197, Cl. 525-309.000.

Steglich, Wolfgang: *See*—
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Steigerwald, Carl J.: *See*—
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Steigerwald, Robert L., to General Electric Company. Induction cooking system. 4,241,250, Cl. 219-10.49R.

Stein, Brooks M.; and Linden, James C., to Great Western Sugar Company, The. Method of stabilizing α-galactosidase. 4,241,185, Cl. 435-188.000.

Steinberg, Albert H.: *See*—
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.

Stelzner, Herbert A.; and Lau, Peter, to Plastik-und Metallverpackung GmbH. Method and device for the insertion of cans into carriers. 4,240,239, Cl. 53-398.000.

Stern, Alfred: *See*—
Sheldon, Neville M.; and Stern, Alfred, 4,241,189, Cl. 521-50.000.

Stio, Joseph B. Push pack. 4,240,548, Cl. 206-250.000.

Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., to Vish Minno Geoloshki Institute. Method of reverse stratification. 4,240,903, Cl. 209-437.000.

Stolz, Robert; and Hahn, Walter, to SKF Industries, Inc. Two row rolling bearing assembly having single piece inner ring and two piece outer ring. 4,240,681, Cl. 308-189.00R.

Stone, Orison W., to Pack Image, Inc. Basket-type carrier for bottles and method of forming the same. 4,240,546, Cl. 206-193.000.

Stonner, Hans M.: *See*—
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.

Stonner, Hans-Martin: *See*—
Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, 4,241,227, Cl. 568-761.000.

Storer, Richard R., Sr. Hydro-electric power plant. 4,241,283, Cl. 290-54.000.

Storz Instrument Company: *See*—
Pickering, Norman C.; and Fisher, Yale, 4,240,410, Cl. 128-1.500.

Stothert & Pitt Limited: *See*—
Heathcote, Terence R.; and Jefferies, Ralph G., 4,240,333, Cl. 92-12.200.

Stouffer Corporation, The: *See*—
McLaughlin, Thomas P., 4,240,270, Cl. 62-341.000.

Stout, James T., to Mead Corporation, The. Article carrier. 4,240,545, Cl. 206-188.000.

Strand, Thomas J., to Feedback Limited. Telephone number memory and indicator system. 4,241,238, Cl. 179-5.500.

Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for clarifying coke quenching water. 4,240,910, Cl. 210-769.000.

Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Central processor unit for executing instructions with a special operand specifier of indeterminate length. 4,241,397, Cl. 364-200.000.

Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Calling instructions for a data processing system. 4,241,399, Cl. 364-200.000.

Strejcek, Jan: *See*—
Stumpf, Albert; and Strejcek, Jan, 4,240,912, Cl. 210-321.200.

Stretanski, Joseph A., to American Cyanamid Company. Polymers stabilized against degradation by ultraviolet radiation. 4,240,954, Cl. 260-45.75F.

Strobel, Lucille C. Multiple use bag with dual purpose straps. 4,240,480, Cl. 150-3.000.

Strobel, Manfred: *See*—
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., to Life Savers, Inc. Non-adhesive chewing gums and method. 4,241,090, Cl. 426-4.000.

Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., to Life Savers, Inc. Calorie-free non-adhesive chewing gums and method. 4,241,091, Cl. 426-4.000.

Stucka, Edward P.; and Trautmann, Harald G., to Honeywell Inc. Floating seal for fluidic devices. 4,240,335, Cl. 92-96.000.

Studley Paper Company, Inc.: *See*—
Fesco, John E., 4,240,813, Cl. 55-381.000.

Studt, William L.: *See*—
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., 4,241,087, Cl. 424-324.000.

Stumpf, Albert; and Strejcek, Jan, to Boehringer Mannheim GmbH. Immersion dialyzer. 4,240,912, Cl. 210-321.200.

Suciu, George D.; and Paustian, John E., to Lummus Company, The. Oxidation of organics in aqueous salt solutions. 4,240,885, Cl. 204-98.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Fehr, Werner, 4,240,580, Cl. 236-49.000.

Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; and Toyo Boseki Kabushiki Kaisha. Textile finishing composition. 4,240,943, Cl. 260-29.40R.

Suggs, John W., to Bell Telephone Laboratories, Incorporated. Ketone synthesis by hydroacylation. 4,241,206, Cl. 542-424.000.

Sugihara, Kunihiko: *See*—
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.

Sugimori, Teruhiko: *See*—
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.

Sugimoto, Hirohiko: *See*—
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.

Sugita, Hiroshi: *See*—
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; Lonseal Corporation; and Orc Manufacturing Co., Ltd. Ultraviolet ray projector. 4,241,255, Cl. 250-504.00R.

Sugiyama, Tsugutoshi: *See*—
Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, 4,241,256, Cl. 250-223.00B.

Sullivan, James J.; and Grey, Charles M. Sterile capping method for a plurality of I.V. bottles. 4,240,242, Cl. 53-471.000.

Sumimoto, Yasukichi; and Kato, Masami, to Toska Co., Ltd.; and Japan Bano'k Co., Ltd. Fastener. 4,240,183, Cl. 24-16.0PB.

Sumitomo Chemical Company, Limited: *See*—
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.

Sumitomo Electric Industries, Ltd.: *See*—
Yamamoto, Masachika, 4,241,327, Cl. 340-52.00A.

Sumitomo Metal Industries Ltd.: *See*—
Aihara, Kenji; and Takahashi, Masashi, 4,240,827, Cl. 75-123.0AA.

Sumitomo Metal Mining Co., Ltd.: *See*—
Tsuchibuchi, Akira; and Kobayashi, Takashi, 4,240,880, Cl. 204-15.000.

Sun Chemical Corporation: *See*—
Hendrix, William T., 4,240,795, Cl. 8-115.600.

Sun, Joseph Z., to W. R. Grace & Co. Multi-layer film containing a layer of crosslinked ethylene/vinyl alcohol copolymer. 4,240,993, Cl. 264-22.000.

Superfos Emballage A/S: *See*—
Bock, Erik, 4,240,554, Cl. 206-519.000.

Suzuki, Arata: *See*—
Bish, Ralph E.; and Suzuki, Arata, 4,240,491, Cl. 160-380.000.

Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,241,154, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.

Swafford, Jerry W.: *See*—
Trammell, Harold L., Jr.; and Swafford, Jerry W., 4,241,298, Cl. 318-17.000.

Swain, Allan L., to Diasonics, Inc. Polar to cartesian mapping apparatus and method. 4,241,412, Cl. 364-731.000.

Swain, Robert J.; and Rutz, William D., to Mapco, Inc. Coated metal fiber coalescing cell. 4,240,908, Cl. 252-325.000.

Swann, David A. Electric switches. 4,241,244, Cl. 200-6.00R.

Swanson, Billy L., to Phillips Petroleum Company. Well acidizing compositions and methods. 4,240,505, Cl. 166-302.000.

Swenson, Richard C., to United States of America, Navy. Condition responsive cable with bendable coaxial sensor mount. 4,241,427, Cl. 367-20.000.

Swenson, Ronald F. Golf putter. 4,240,636, Cl. 273-169.000.

Swerdloff, Michael D.: *See*—
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., 4,240,966, Cl. 260-340.50R.

Sybron Corporation: *See*—
Carter, William W., 4,240,878, Cl. 204-1.00T.
Jandourek, Emil, 4,240,832, Cl. 106-35.000.

Synair Corporation: *See*—
Gomberg, Edward N.; and Somesla, Dana W., 4,240,852, Cl. 156-96.000.

Syntex (U.S.A.) Inc.: *See*—
Valila, Veikko F., 4,241,254, Cl. 250-439.00P.

Systron-Donner Corporation: *See*—
Tarczy-Hornoch, Zoltan, 4,241,416, Cl. 364-900.000.

Syukuya, Akio: *See*—
Naito, Kiyoshi; and Syukuya, Akio, 4,240,788, Cl. 432-136.000.

Syva Company: *See*—
Singh, Prithipal; and Pirio, Marcel R., 4,241,177, Cl. 435-7.000.

Szabo, Paul: *See*—
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.

Szala, Lawrence E.: *See*—
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.

Szoka, Francis C., Jr.: *See*—
Papahadjopoulos, Demetrios P.; and Szoka, Francis C., Jr., 4,241,046, Cl. 424-19.000.

Tachihara, Satoru: *See*—
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.

Tadokoro, Eiichi; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Magnetic sheet recorder with a magnetic sheet surface treating means. 4,241,368, Cl. 360-128.000.

Taeuber, Reinhard; and Neumayr, Hans, to Siemens Aktiengesellschaft. Remote control system with proportional value transmission. 4,241,331, Cl. 340-167.00R.

Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, to Eisai Co., Ltd. Apparatus for detecting foreign matters in liquids. 4,241,256, Cl. 250-223.00B.

Tait, William S., to Petrolite Corporation. Inhibition of pitting corrosion. 4,240,925, Cl. 252-389.00A.

Takada, Shunji: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.

Takahashi, Hiroshi: *See*—
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Takahashi, Keiichi: *See*—
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Takahashi, Masashi: *See*—
Aihara, Kenji; and Takahashi, Masashi, 4,240,827, Cl. 75-123.0AA.

Takahashi, Nobuhiro; and Hirata, Ken-ichi, to Nippon Kokan Kabushiki Kaisha. Apparatus for heat-treating metallic material. 4,240,616, Cl. 266-119.000.

Takami, Masanori: *See*—
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.

Takano, Eiichi, to Canon Kabushiki Kaisha. Lens system having selectively shiftable focal length. 4,240,697, Cl. 350-183.000.

Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, to Mitsuboshi Belting Ltd. Apparatus for testing power transmission belt. 4,240,283, Cl. 73-7.000.

Takasaki, Shigeru: *See*—
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.

Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, to Kyowa Hakko Kogyo Co., Ltd. Fortimicin factors KG_1, KG_2 and KG_3 and processes for production thereof. 4,241,182, Cl. 435-80.000.

Takato, Norio: *See*—
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.

Takeda Chemical Industries, Ltd.: *See*—
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.

Takeda, Keiso, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control system in internal combustion engine. 4,240,390, Cl. 123-480.000.

Takeda, Kimio: *See*—
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.

Takehara, Takao, to Nippon Gakki Seizo Kabushiki Kaisha. Audio power amplifier. 4,241,313, Cl. 330-253.000.

Takekawa, Nobuhiro: *See*—
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Takesako, Mutsuo: *See*—
Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, 4,240,283, Cl. 73-7.000.

Takimoto, Hiroyuki: *See*—
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,240,720, Cl. 352-170.000.

Takita, Tomohisa: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.

Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, to Nissan Chemical Industries, Ltd. Urea resin foam mat. 4,240,817, Cl. 71-29.000.

Tamas, Istvan, to Vasipari Kutato Intezet. Metallothermal process for the simultaneous production of magnesium and cement or calcium and cement. 4,240,825, Cl. 75-67.00R.

Tamura, Masayuki: *See*—
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, 4,240,392, Cl. 123-145.00A.

Tanabe Seiyaku Co., Ltd.: *See*—
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,052, Cl. 424-180.000.
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,053, Cl. 424-180.000.

Tanahashi, Toshio: *See*—
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Tanaka, Akio, to Zenith Radio Corporation. Memory saving all-channel digital television receiver. 4,241,449, Cl. 455-186.000.

Tanaka, Haruo: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Tanaka, Katsufusa, to Mitsubishi Denki Kabushiki Kaisha. Operation mechanism. 4,240,300, Cl. 74-2.000.

Tanaka, Katsumi: *See*—
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.

Tanaka, Koji: *See*—
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.

Tanaka, Kunio: *See*—
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.

Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, to Mitsubishi Rayon Co., Ltd. Method of producing water-absorbent solid cloth-like articles. 4,241,007, Cl. 264-324.000.

Tange, Charles H., to Mobil Oil Corporation. Egg carton with crush resistant top. 4,240,575, Cl. 229-29.00M.

Tanigawa, Singo: *See*—
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.

Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, to Mitsubishi Gas Chemical Company, Inc. Method of treating the surfaces of shaped articles of polycarbonate resins. 4,241,116, Cl. 427-386.000.

Tapco Products Company, Inc.: *See*—
Rhoades, James J., 4,240,279, Cl. 72-319.000.

Tarczy-Hornoch, Zoltan, to Systron-Donner Corporation. Monitoring apparatus for processor controlled equipment. 4,241,416, Cl. 364-900.000.

Tarneja, Krishan S.: *See*—
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.

Tatsuno, Kimio: *See*—
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.

Tausch, Walter; and Gausmann, Hans, to Carl Zeiss-Stiftung. Process and apparatus for recognizing cloud disturbances in a sample solution which is being subjected to absorption photometry. 4,240,752, Cl. 356-436.000.

Taylor, Attalee S.: *See*—
Cobaugh, Robert F.; and Taylor, Attalee S., 4,241,381, Cl. 361-413.000.

Taylor, Billy W. Specimen mailer. 4,240,547, Cl. 206-204.000.

Taylor, Thomas E.: *See*—
Bryers, Richard W.; and Taylor, Thomas E., 4,240,364, Cl. 110-347.000.

Taylor, William I.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

TDK Electronics Co., Ltd.: *See*—
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Teaneck Graphics Corp.: *See*—
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,240,743, Cl. 355-73.000.

Tecal S.A.R.L.: *See*—
Monvoisin, Jacques, 4,240,343, Cl. 101-38.00R.

Teccor Electronics, Inc.: *See*—
Trammell, Harold L., Jr.; and Swafford, Jerry W., 4,241,298, Cl. 318-17.000.

Teeslink, John W., to TLC Engineering, Inc. Centering and wear compensating means for punch presses and the like. 4,240,314, Cl. 83-635.000.

Teichmann, Paul G., to Trutzschler GmbH & Co. KG. Web guiding device. 4,240,181, Cl. 19-0.250.

Tektronix, Inc.: *See*—
Barter, Archie M., 4,241,296, Cl. 315-397.000.

Telex Computer Products, Inc.: *See*—
Massey, Raymond P., 4,241,311, Cl. 328-167.000.

Temin, Samuel C., to Kendall Company, The. Resin coated wooden articles produced by contacting a wooden article with a rather quick curing phenoxy or polyamide resin system. 4,241,115, Cl. 427-384.000.

Temple, Chester S., to PPG Industries, Inc. Emulsion composition and method for use in treating glass fibers. 4,240,944, Cl. 260-29.6NR.

Temple University: *See*—
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.

Tempra Therm Limited: *See*—
Gray, Adrian L., 4,241,003, Cl. 264-254.000.

Teramae, Kazuhiro: *See*—
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Terashima, Isamu, to Hitachi, Ltd. Apparatus for detecting concentration of toner in developing powder. 4,240,375, Cl. 118-689.000.

Terlecki, Leo, to GF Business Equipment, Inc. File lock and interlock. 4,240,685, Cl. 312-217.000.

Terry, Melvin D. Roll handling apparatus. 4,240,773, Cl. 414-664.000.

Teske, Lothar. Wedge-pin fastener. 4,240,322, Cl. 85-7.000.

Texas Instruments Incorporated: *See*—
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.

Texasgulf Inc.: *See*—
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.

Theiling, Ernst-August: *See*—
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.

Theisler, Charles W. Knee brace. 4,240,414, Cl. 128-80.00C.

Thermasol, Ltd.: *See*—
Altman, Murray; and Bellasalma, Gerald J., 4,240,166, Cl. 4-542.000.

Thermatool Corporation: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,241,284, Cl. 219-61.200.

Thermo Electron Corporation: *See*—
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., 4,240,409, Cl. 128-1.00D.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track tamper. 4,240,352, Cl. 104-12.000.

Thiem, James F.; and Scott, Jeffrey L. Self-contained mobile pool cleaning apparatus. 4,240,174, Cl. 15-1.700.

Thirant, Lydie, to Thomson-CSF. Thermo-optique smectic liquid-crystal storage display. 4,240,712, Cl. 350-351.000.

Thomas Broadbent & Sons Limited: *See*—
Burke, Anthony B., 4,240,913, Cl. 210-373.000.

Thomas, Joyce K.: *See*—
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.

Thompson, Russell L., to Helen of Troy Corporation. Differential hair engagement retainer. 4,240,451, Cl. 132-42.00A.

Thompson, Thomas D., III: *See*—
Moll, William F., Jr.; and Thompson, Thomas D., III, 4,240,951, Cl. 260-40.00R.

Thompson, William L., to Babcock & Wilcox Company, The. Linearization circuit. 4,241,303, Cl. 323-19.000.

Thomson-CSF: *See*—
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.
Thirant, Lydie, 4,240,712, Cl. 350-351.000.

Thorne, Glenn A.: *See*—
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.

Thorson, Mark R. Apparatus for scan conversion. 4,241,341, Cl. 340-744.000.

Thring, Robin H.: *See*—
Furlong, Owen D.; and Thring, Robin H., 4,240,419, Cl. 128-204.230.

Thumberger, Harold C.: *See*—
Thumberger, Ollibelle; and Thumberger, Harold C., 4,240,170, Cl. 5-508.000.

Thumberger, Ollibelle; and Thumberger, Harold C. Adjustable foot brace. 4,240,170, Cl. 5-508.000.

Tiede, Herbert R.; and Pierzchala, Richard P., to United States of America, Navy. Arctic canteen. 4,240,272, Cl. 62-457.000.

Tiemstra, Peter J. Pectin formulations, products and methods having delayed-action acidulants. 4,241,099, Cl. 426-577.000.

Tietjens, Eduard W.: *See*—
Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., 4,240,199, Cl. 30-43.600.

Tignor, Thomas P.: *See*—
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., 4,241,322, Cl. 333-202.000.

Tillenburg, Johannes, to Abex Pagid Reibbelag GmbH. Brake pad for disc brakes. 4,240,530, Cl. 188-250.00E.

Timex Corporation: *See*—
Grohoski, Raymond J., 4,241,442, Cl. 368-294.000.
Leibowitz, Marshall, 4,240,713, Cl. 350-357.000.
Lugaresi, Thomas J., 4,241,246, Cl. 200-52.00R.
Skwarek, Jean P., 4,241,439, Cl. 368-204.000.

Timler, Stan: *See*—
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.

Tims, Orinda L., to Standard Brands Incorporated. Flour tortillas. 4,241,106, Cl. 426-138.000.

Tinti, Maria O.: *See*—
deWitt, Paolo; and Tinti, Maria O., 4,240,984, Cl. 568-435.000.

TLC Engineering, Inc.: *See*—
Teeslink, John W., 4,240,314, Cl. 83-635.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.

Toda, Kiyoshi: *See*—
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

Toda, Toshimasa: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Tokai Denka Kogyo Kabushiki Kaisha: *See*—
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Tokunaga, Masayuki; and Otsuka, Yoshio, to Nissan Motor Company, Limited. Skid control system. 4,240,672, Cl. 303-92.000.

Tokyo Bussan Kabushiki Kaisha: *See*—
Kimura, Hideyuki, 4,240,690, Cl. 350-36.000.

Tokyo Juki Kogyo Kabushiki Kaisha: *See*—
Kondo, Shigeki, 4,240,185, Cl. 26-19.000.

Tokyo Magnetic Printing Co., Ltd.: *See*—
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Aoshima, Terutaka; and Ikemizu, Tokihiko, 4,241,288, Cl. 219-441.000.
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Okamura, Yasuhiro, 4,240,228, Cl. 49-478.000.
Uranishi, Michiyoshi, 4,240,295, Cl. 73-607.000.

Tomlinson, John P.: *See*—
Canning, Rodger G.; and Tomlinson, John P., 4,241,125, Cl. 428-158.000.

Tomy Kogyo Co., Inc.: *See*—
Watanabe, Hiroyuki, 4,240,632, Cl. 273-88.000.
Watanabe, Hiroyuki, 4,240,633, Cl. 273-88.000.

Torbet, Christopher J., to Fluorocarbon Company, The. Process for bonding carbon substrates using particles of a thermally stable solid. 4,241,104, Cl. 427-113.000.

Torisawa, Akira: *See*—
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.

Tornqvist, Peter J. T. System for displaying a number of pictures, notices or similar announcements. 4,240,219, Cl. 40-476.000.

Torrington Company, The: *See*—
Benson, Carl F., 4,240,682, Cl. 308-216.000.

Toshimitsu, Yoshihiko: *See*—
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,240,331, Cl. 91-434.000.

Toska Co., Ltd.: *See*—
Sumimoto, Yasukichi; and Kato, Masami, 4,240,183, Cl. 24-16.0PB.

Towle, Herbert C.: *See*—
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.

Towns, Edward J.: *See*—
Brown, Edward M.; and Towns, Edward J., 4,240,570, Cl. 222-442.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, 4,240,889, Cl. 204-195.00B.

Toyo Kogyo Co., Ltd.: *See*—
Mashimo, Toru, 4,240,511, Cl. 173-1.000.

Toyo Rubber Industry Co., Ltd., The: *See*—
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.

Toyoda, Shuhei: *See*—
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Katayama, Nobuaki; and Koga, Hideaki, 4,240,524, Cl. 184-6.120.
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.
Shimazaki, Ruji, 4,240,389, Cl. 123-492.000.
Takeda, Keiso, 4,240,390, Cl. 123-480.000.

Traber, Walter: *See*—
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.

Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., to RCA Corporation. Sprayable titanium composition. 4,241,108, Cl. 427-162.000.

Tracy, John M.; and Yeh, Pochi A., to Rockwell International Corporation. Multilayer electro-optically tunable filter. 4,240,696, Cl. 350-163.000.

Trama, Luigi: *See*—
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.

Trammell, Harold L., Jr.; and Swafford, Jerry W., to Teccor Electronics, Inc. Speed control switch. 4,241,298, Cl. 318-17.000.

Tranquilli, Henry R.: *See*—
Martin, Alton R.; and Tranquilli, Henry R., 4,240,589, Cl. 241-81.000.

Transworld Drilling Company: *See*—
Riggs, Olen L., Jr., 4,240,892, Cl. 204-195.00F.

Trautmann, Harald G.: *See*—
Stucka, Edward P.; and Trautmann, Harald G., 4,240,335, Cl. 92-96.000.

Trautwein, Hansjorg. Valve assembly. 4,240,459, Cl. 137-318.000.

Traynor, Sean G.: *See*—
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.

Treilles, Jean-Noel: *See*—
Lechevin, Jean-Claude; and Treilles, Jean-Noel, 4,241,047, Cl. 424-33.000.

Tresch, Erwin; and Muggli, Jurg, to Cerberus AG. Smoke detector with bimetallic element for temperature compensation. 4,241,282, Cl. 250-574.000.

Trezise, Richard D.: *See*—
Ku, Joseph P.; and Trezise, Richard D., 4,240,756, Cl. 400-124.000.

Tri-Tech, Inc.: *See*—
Haydon, Arthur W.; and Dean, John J., 4,241,270, Cl. 310-164.000.

Triestram, Douglas E.: *See*—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.

Trimble, Edward F., to EG & G Sealol, Inc. High pressure bellows assembly. 4,240,610, Cl. 251-335.00B.

Triner Scale and Manufacturing Co.: *See*—
Sookikian, Dennis M.; and Gudea, Dumitru, 4,241,407, Cl. 364-567.000.

Troponwerke Dinklage & Co.: *See*—
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Trout, George M.: *See*—
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.

Troy, Stephen R. Incinerator bag. 4,240,363, Cl. 110-241.000.

Trubisky, Leonard G., to Honeywell Information Systems Inc. Apparatus for performing single error correction and double error detection. 4,241,446, Cl. 371-37.000.

Truck-Lite Company, Inc.: *See*—
Sage, Howard A., 4,241,371, Cl. 362-61.000.

Truelove, James E.: *See*—
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,241,055, Cl. 424-180.000.

Trutzschler GmbH & Co. KG: *See*—
Leifeld, Ferdinand; and Marx, Jurgen, 4,240,182, Cl. 19-81.000.
Teichmann, Paul G., 4,240,181, Cl. 19-0.250.

TRW Inc.: *See*—
Wade, Edward C., 4,241,358, Cl. 357-30.000.

Tsai, Kuo L. Automatic umbrella. 4,240,454, Cl. 135-24.000.

Tsuchibuchi, Akira; and Kobayashi, Takashi, to Sumitomo Metal Mining Co., Ltd. Method and apparatus for selectively plating a material. 4,240,880, Cl. 204-15.000.

Tsuchida, Toshio: *See*—
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, 4,240,889, Cl. 204-195.00B.

Tsuji, Sadahiko; and Sato, Yasuhisa, to Canon Kabushiki Kaisha. Large aperture zoom lens. 4,240,698, Cl. 350-184.000.

Tsuji, Sadahiko: *See*—
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.

Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, to Tanabe Seiyaku Co., Ltd. Novel nitrosourea compounds and process for preparing the same. 4,241,052, Cl. 424-180.000.

Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, to Tanabe Seiyaku Co., Ltd. Novel nitrosourea compounds and process for preparing the same. 4,241,053, Cl. 424-180.000.

Tsuzuki, Akira: *See*—
Fujita, Hiro; and Tsuzuki, Akira, 4,241,435, Cl. 368-85.000.

Tsybulina, Aza A.: *See*—
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Tu, Ju Ching: *See*—
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Tuenkers GmbH: *See*—
Tunkers, Josef-Gerhard, 4,240,620, Cl. 269-24.000.

Tults, Juri: *See*—
Blatter, Harold; and Tults, Juri, 4,241,450, Cl. 455-182.000.

Tunkers, Josef-Gerhard, to Tuenkers GmbH. Gripping arrangement. 4,240,620, Cl. 269-24.000.

Tuomaala, Jorma, to Osakeyhtio, A. Ahlstrom. Circular saw blade. 4,240,315, Cl. 83-848.000.

Turk, Bartel G., to Quaker Oats Company, The. Apparatus for cutting an extruded product. 4,240,779, Cl. 425-313.000.

Turner, Sam R.: *See*—
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.

Tuss, John J., to Bendix Corporation, The. Coordinate measuring machine. 4,240,205, Cl. 33-1.00M.

Tyler, David. Ratchet devices. 4,240,309, Cl. 254-369.000.

U and I, Incorporated: *See*—
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., 4,241,093, Cl. 426-258.000.

Uba, Toshio, to Gates Rubber Company, The. Battery strap welded connection. 4,241,151, Cl. 429-94.000.

Uchida, Takashi: *See*—
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Udagawa, Yoshihiro: *See*—
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Udall, Humfrey N.: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,241,284, Cl. 219-61.200.

Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Motor driven camera having a detachable drive unit. 4,240,733, Cl. 354-173.000.

Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,241,433, Cl. 368-76.000.

Ueda, Makoto: *See*—
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.

Ueda, Masato; and Andoh, Takeshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of manufacturing rotor blade. 4,241,110, Cl. 427-203.000.

Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Kob; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Titanium trichloride catalyst and process for the production thereof. 4,240,928, Cl. 252-429.00B.

Uffelman, Malcolm R., to Scope, Inc. Radar target pattern recognition system using logarithmic analysis. 4,241,350, Cl. 343-5.0SA.

Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bestatin. 4,240,975, Cl. 260-463.000.

Umezu, Kenji: *See*—
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Uni-Cardan AG: *See*—
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.

Union Carbide Agricultural Products, Inc.: *See*—
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Baucom, Keith B., 4,241,223, Cl. 568-611.000.
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America: *See*—
White, David C., 4,241,187, Cl. 435-284.000.
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Figge, Irving E., 4,241,117, Cl. 428-35.000.
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Carli, Richard T., 4,241,398, Cl. 364-200.000.
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Schimko, Reinhold, 4,240,274, Cl. 66-64.000.
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University of Toronto, The Governing Council of the: *See*—
Hsia, Jen C., 4,240,797, Cl. 23-230.00B.
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Iskander, Magdy F.; and Durney, Carl H., 4,240,445, Cl. 128-804.000.
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Urbinati, Mario; and Nannini, Alessandro, to Centro Ricerche Fiat S.p.A. Induction units for internal combustion engines with petrol injection. 4,240,384, Cl. 123-470.000.
Ushiyama, Yoshito, to Kabushiki Kaisha Suwa Seikosha. Multi-colored display device. 4,241,339, Cl. 340-702.000.
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Garner, Derek H., 4,240,172, Cl. 12-14.500.
Valila, Veikko F., to Syntex (U.S.A.) Inc. X-Ray source moving mechanism suitable for panoramic radiography. 4,241,254, Cl. 250-439.00P.
van der Lely, Cornelis. Overload couplings. 4,240,514, Cl. 180-53.00D.
Van der Valk, Nicolaas J. L., to U.S. Philips Corporation. Circuit for increasing a signal slope of a periodically occurring signal mainly near a reference level. 4,241,362, Cl. 358-32.000.
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Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,240,245, Cl. 56-341.000.
Vapor Corporation: *See*—
Schultz, John P., 4,241,403, Cl. 364-300.000.
Vasicek, Vladimir: *See*—
Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, 4,240,471, Cl. 139-114.000.
Vasilion, James S.: *See*—
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.
Vasipari Kutato Intezet: *See*—
Tamas, Istvan, 4,240,825, Cl. 75-67.00R.
Vasishth, Ramesh C.; and Wang, Robert S., to Envirosol Systems International, Ltd. Water clean up aerosol paint. 4,240,940, Cl. 260-22.00R.
VDO Adolf Schindling AG: *See*—
Kern, Eckhard, 4,241,438, Cl. 368-185.000.
Kister, Horst, 4,241,444, Cl. 370-85.000.
Walther, Henry, 4,241,278, Cl. 315-106.000.
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von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.
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Velsicol Chemical Corporation: *See*—
Albright, James A., 4,240,953, Cl. 260-45.70P.
Shukla, Jayendra R., 4,241,145, Cl. 428-537.000.
Vercelletto, Michel. Prefabricated wall designed in particular for the construction of dwelling houses. 4,240,233, Cl. 52-127.000.
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Schoer, Heinz; and Schultze, Werner, 4,241,148, Cl. 428-654.000.
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Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.
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Vial, Jean; and Sauvan, Gerard, to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM. Apparatus for the treatment of surfaces involving the use of at least a solvent. 4,240,453, Cl. 134-107.000.
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Vibronek, Robert D.: *See—*
Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., 4,241,108, Cl. 427-162.000.

Vickers Limited: *See—*
Lawson, Leslie E., 4,240,737, Cl. 354-299.000.

Vickers Shipbuilding Group Ltd.: *See—*
Braithwaite, John C., 4,240,613, Cl. 254-315.000.

Victor Company of Japan Limited: *See—*
Shiga, Takashi, 4,241,364, Cl. 360-72.100.

Villari, Frank K.: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Vinals, Joaquin F.: *See—*
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, to Societe Nationale Industrielle Aerospatiale. High performance aerodynamic airfoil for aircraft wing. 4,240,598, Cl. 244-35.00R.

Vincent, Ogden W. Boiler steam engine with steam recovery and recompression. 4,240,259, Cl. 60-670.000.

Vine, James, to Westinghouse Electric Corp. Elevator system. 4,240,527, Cl. 187-29.00R.

Vineyard, Clark: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.

Vinton, David S., to Caterpillar Tractor Co. Control system for an elastomer extrusion and applicator apparatus. 4,240,863, Cl. 156-361.000.

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Virgulto, James A.; and Snyder, Peter E. Apparatus for sensing coughs. 4,240,444, Cl. 128-782.000.

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Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.

Vivitar Corporation: *See—*
Praamsma, Michael F., 4,240,738, Cl. 355-1.000.

Vock, Manfred H.: *See—*
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Vollmann, Hansjorg: *See—*
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.

Volpenhein, Robert A.; and Jandacek, Ronald J., to Procter & Gamble Company, The. Detoxifying lipophilic toxins. 4,241,054, Cl. 424-180.000.

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Vonnegut, George L., to General Motors Corporation. Method of making cast metal turbine wheel with integral radial columnar grain blades and equiaxed grain disc. 4,240,495, Cl. 164-125.000.

von Rintelen, Harald: *See—*
Saleck, Wilhelm; and von Rintelen, Harald, 4,241,173, Cl. 430-569.000.

Vortec Corporation: *See—*
Inglis, Leslie R., 4,240,261, Cl. 62-5.000.

Votava, Werner F.; and Wonnacott, Thomas W., to Ferro Corporation. Cadmium glass having low cadmium oxide solubility. 4,240,837, Cl. 106-48.000.

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Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink Gerrit J., 4,240,287, Cl. 73-61.00R.

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Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, 4,240,471, Cl. 139-114.000.

W. Hegenscheidt Gesellschaft mbH: *See—*
Berstein, Garrj, 4,240,770, Cl. 408-83.000.

W. R. Grace & Co.: *See—*
Block, Jacob, 4,240,915, Cl. 252-8.50B.
Block, Jacob, 4,240,924, Cl. 252-317.000.
Sanborn, Philip A., Jr., 4,240,241, Cl. 53-412.000.
Sun, Joseph Z., 4,240,993, Cl. 264-22.000.

Wada, Shigetaka: *See—*
Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, 4,240,890, Cl. 204-195.00S.

Wada, Shozo: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.

Wada, Tomio: *See—*
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

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Wade, Edward C., to TRW Inc. Radiation sensitive device with lateral current. 4,241,358, Cl. 357-30.000.

Wagener, Earl H.: *See—*
Harris, Robert F.; and Wagener, Earl H., 4,240,982, Cl. 564-285.000.

Wagner Electric Corporation: *See—*
Angert, Richard W.; and Palmer, Stephen G., 4,240,258, Cl. 60-589.000.

Wahren, Douglas, to AB Karlstads Mekaniska Werkstad. Suspension device for a headbox for paper and pulp machines. 4,240,872, Cl. 162-344.000.

Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, to Kibun Co., Ltd. Process for producing soybean milk. 4,241,100, Cl. 426-598.000.

Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., to Bristol-Myers Company. Trimethylsilyl substituted penicillins. 4,240,960, Cl. 260-239.100.

Wallace Murray Corporation: *See—*
Sarle, Charles R.; and Owen, Bruce R., 4,240,678, Cl. 308-121.000.

Walser, Armin, to Hoffmann-La Roche Inc. Process for the preparation of imidazobenzodiazepines. 4,240,962, Cl. 260-245.600.

Walsh, Edward J.: *See—*
Pearce, Henry A., Jr.; and Walsh, Edward J., 4,240,917, Cl. 336-94.000.

Walter, Lothar: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.

Walter, Peter A.: *See—*
Payne, Douglas L.; and Walter, Peter A., 4,240,677, Cl. 308-15.000.

Walther, Henry, to VDO Adolf Schindling AG. Indicator device with vacuum fluorescence elements. 4,241,278, Cl. 315-106.000.

Waltke, Robert W., to Pennwalt Corporation. Jig assembly for preparing dental impressions for casting. 4,240,605, Cl. 249-54.000.

Walton, Richard E., II; and Sauerwein, William D., to Black & Decker Inc. Jig saw. 4,240,204, Cl. 30-393.000.

Walz, Gerd: *See—*
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.

Wan, Chee-Gen, to Halcon Research and Development Corp. Treatment of carbonylation effluent. 4,241,219, Cl. 560-232.000.

Wang, Robert S.: *See—*
Vasishth, Ramesh C.; and Wang, Robert S., 4,240,940, Cl. 260-22.00R.

Wang, Tsuey T., to Bell Telephone Laboratories, Incorporated. Production of piezoelectric PVDF films. 4,241,128, Cl. 428-212.000.

Wang, Yung-liang: *See—*
Bloomquist, Marvin G.; and Wang, Yung-liang, 4,241,429, Cl. 367-52.000.

Ward, Frederick E.: *See—*
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., 4,241,069, Cl. 424-263.000.

Ward Machinery Company, The: *See—*
Ward, William F., Sr., 4,240,312, Cl. 83-311.000.

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Warren, William F.: *See—*
Whipple, Robert L.; and Warren, William F., 4,240,341, Cl. 100-49.000.

Wartman, Lloyd H., to WFR/Aquaplast Corp. Orthopedic cast. 4,240,415, Cl. 128-90.000.

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Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.

Watanabe, Hiroshi: *See—*
Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,241,281, Cl. 315-161.000.

Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Baseball game. 4,240,632, Cl. 273-88.000.

Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Game having movable object and object striking member. 4,240,633, Cl. 273-88.000.

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Watson, George C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Pulse radar altimeters. 4,241,346, Cl. 343-7.00A.

Watzold, Peter: *See—*
Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, 4,240,227, Cl. 49-348.000.

Weber, Adam: *See—*
Botz, Jakob; Mutschler, Erich; and Weber, Adam, 4,241,260, Cl. 307-10.0LS.

Weber, Herb. Meter card parking system. 4,240,649, Cl. 283-13.000.
Webster, Frank G.; and Regan, Michael T., to Eastman Kodak Company. Organic heterocyclic electrophotosensitive materials for migration imaging processes. 4,241,157, Cl. 430-41.000.
Wedding, Brent M.: *See*—
Borrelli, Nicholas F.; and Wedding, Brent M., 4,240,836, Cl. 106-47.00Q.
Wedel, John A.: *See*—
Anderson, Richard D.; and Wedel, John A., 4,240,741, Cl. 355-40.000.
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Lefevre, Lloyd E.; and Wegenka, Mark A., 4,241,127, Cl. 428-177.000.
Wegmann, Jerome B.; and Kotyk, Jeffrey M., to McNeil Corporation. Valve mechanism for a hydraulic expansible chamber motor. 4,240,328, Cl. 91-287.000.
Wegner, Dieter F. Display structure. 4,240,764, Cl. 403-252.000.
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, to Stauffer Chemical Company. Tri(dibromoneopentyl) antimonite flame retardants. 4,240,956, Cl. 260-45.75B.
Weiler, Ernest D.: *See*—
Miller, George A.; and Weiler, Ernest D., 4,241,214, Cl. 548-101.000.
Weir, W. David: *See*—
Kilbourn, Edward E.; and Weir, W. David, 4,241,079, Cl. 424-285.000.
Weiss, Benjamin F. L.: *See*—
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.
Weiss, Martin J.: *See*—
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Welter, Thomas N. H.: *See*—
Schmit, Georges J. E.; and Welter, Thomas N. H., 4,240,486, Cl. 152-330.00R.
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Wenning, George T.: *See*—
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, to Rohm GmbH. Acrylonitrile copolymers having low residual monomer content and methods for their preparation. 4,241,203, Cl. 526-218.000.
Wenzel, Wolfgang; Meckel, Walter; and Pedain, Josef, to Bayer Aktiengesellschaft. Process for the preparation of aqueous dispersions or solutions of isocyanate polyaddition products. 4,240,942, Cl. 260-29.2TN.
Werkzeugmaschinenfabrik Oerlikon-Buhrle: *See*—
Hurlemann, Ernst, 4,240,325, Cl. 89-190.000.
Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, 4,240,350, Cl. 102-215.000.
Werling, John M.: *See*—
Bolton, Douglas R.; and Werling, John M., 4,240,639, Cl. 273-346.000.
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West, Edmund J.: *See*—
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.
Western Electric Company, Inc.: *See*—
Celler, George K.; and Miller, Gabriel L., 4,240,843, Cl. 148-1.500.
Mayweather, William T., 4,241,105, Cl. 427-125.000.
Westinghouse Electric Corp.: *See*—
Dooley, Thomas E., 4,241,386, Cl. 362-216.000.
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.
Heytmeijer, Herman R., 4,240,786, Cl. 431-359.000.
Johnson, John L.; and Moberly, Lawrence E., 4,241,271, Cl. 310-219.000.
Lee, Pang K., 4,240,830, Cl. 75-212.000.
Pearce, Henry A., Jr.; and Walsh, Edward J., 4,240,917, Cl. 336-94.000.
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., 4,240,992, Cl. 264-21.000.
Phillips, David C.; and Smith, James D. B., 4,241,195, Cl. 525-3.000.
Pitkjaan, Elam; and Endler, James F., 4,241,391, Cl. 362-267.000.
Saunders, Howard E.; and Smith, James D. B., 4,241,101, Cl. 427-32.000.
Stacey, Eric. J.; and Kernick, Andress, 4,241,395, Cl. 363-39.000.
Vine, James, 4,240,527, Cl. 187-29.00R.
Westvaco Corporation: *See*—
Martin, Alton R.; and Tranquilli, Henry R., 4,240,589, Cl. 241-81.000.
Wetherell, William B.; and Womble, David A., to Itek Corporation. All-reflective three element objective. 4,240,707, Cl. 350-294.000.
Wetterhorn, Richard H., to Dresser Industries, Inc. Motion amplifier for condition responsive gauge instrument. 4,240,298, Cl. 73-732.000.
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, to Boehringer Ingelheim GmbH. Penicillins and salts thereof. 4,241,056, Cl. 424-226.000.
WFR/Aquaplast Corp.: *See*—
Wartman, Lloyd H., 4,240,415, Cl. 128-90.000.
Whipple, Robert: *See*—
Whipple, Robert L.; and Warren, William F., 4,240,341, Cl. 100-49.000.
Whipple, Robert L.; and Warren, William F., to Whipple, Robert. Can crusher. 4,240,341, Cl. 100-49.000.
Whirlco, Inc.: *See*—
Bergman, Carl P., 4,240,566, Cl. 222-135.000.
White, David C., to United States of America, America. Method and apparatus for cell and tissue culture. 4,241,187, Cl. 435-284.000.
Whitehurst, Gerald E.: *See*—
Hedgcock, Richard L.; and Whitehurst, Gerald E., 4,240,534, Cl. 192-13.00R.
Whiteman, Benton A.: *See*—
Wong, Lip F.; and Whiteman, Benton A., 4,240,652, Cl. 285-91.000.
Whitman, Charles I.: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,240,831, Cl. 75-228.000.
Wichers, Max F. Sports spectacle structure. 4,240,718, Cl. 351-62.000.
Wick, Richard, to AGFA-Gevaert, A.G. Photographic apparatus with automatic focusing means. 4,240,726, Cl. 354-25.000.
Wicks, George E., Jr.: *See*—
Sommer, Harold Z.; and Wicks, George E., Jr., 4,240,965, Cl. 260-326.410.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,209, Cl. 546-147.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,210, Cl. 546-261.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,211, Cl. 546-261.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,212, Cl. 546-291.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,218, Cl. 560-163.000.
Wiczer, Max. Elastic band for pinball game. 4,240,634, Cl. 273-127.00R.
Wiedmann, Erwin; and Stacklies, Horst, to Prontor-Werk Alfred Gauthier GmbH. Photographic camera shutter electromagnetic system for controlling photographic light admitted to camera. 4,240,728, Cl. 354-38.000.
Wiener, Daniel P.: *See*—
Flora, Laurence P.; and Wiener, Daniel P., 4,241,414, Cl. 364-786.000.
Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, to Metallgesellschaft Aktiengesellschaft. Process for reducing biological oxygen demand of gas condensate. 4,241,227, Cl. 568-761.000.
Wiesner, Paul: *See*—
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.
Wigdahl, Arthur G. Boiler for domestic heating systems. 4,240,362, Cl. 110-234.000.
Wiknich, Douglas D., to Harry Major Machine & Tool Co. Walking beam accumulating conveyor. 4,240,542, Cl. 198-751.000.
Wilbur, Clayton V., to International Business Machines Corporation. Extended life electrochromic display cell. 4,240,714, Cl. 350-357.000.
Wilcox, Brian L., to Dunlop Limited. Tire breaker strip with folded plies. 4,240,488, Cl. 152-361.0FP.
Wilczynski, Janusz S.: *See*—
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.
Wilke, Werner; Gref, Hans; and Frenken, Hans, to AGFA-Gevaert, A.G. Apparatus for the continuous preparation of photographic emulsions. 4,241,023, Cl. 422-187.000.
Willamette Industries, Inc.: *See*—
Croley, Thomas E., 4,240,565, Cl. 222-105.000.
William H. Rorer, Inc.: *See*—
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., 4,241,087, Cl. 424-324.000.
Williams, Robert D.: *See*—
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., 4,241,061, Cl. 424-250.000.
Williams, Walter E., Jr. Digital lighting control system. 4,241,295, Cl. 315-294.000.
Wilmarth, Russell F. Shell investment casting process. 4,240,493, Cl. 164-35.000.
Wilson, Bradford W. Hand grip exercise device. 4,240,624, Cl. 272-68.000.
Wilson, James F. Compact hammer with recessed face and notched claw. 4,240,478, Cl. 145-29.00R.
Wilson, Joe C.: *See*—
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,011, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,012, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,013, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,016, Cl. 422-17.000.
Wilson, Robert B.: *See—*
Pierce, Robert B.; and Wilson, Robert B., 4,240,535, Cl. 192-17.00C.
Winderman, Jay B.; and Schmid, Hans-Peter, to General Dynamics Corporation, Pomona Division. Articulated eyeball radome. 4,240,596, Cl. 244-3.160.
Wingard, Theodore K.: *See—*
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., 4,241,322, Cl. 333-202.000.
Winkler, Johannes: *See—*
Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, 4,240,792, Cl. 8-607.000.
Winston, Roland, to University of Chicago, The. Energy transmission. 4,240,692, Cl. 350-96.100.
Winterbottom, Walter L.: *See—*
Schmatz, Duane J.; and Winterbottom, Walter L., 4,240,574, Cl. 228-217.000.
Wirbisky, Theodore J.: *See—*
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.
Wirges, Winfried; and Bauschke, Guenter, to Stabilus GmbH. Gas spring for balancing the weight of the lid on the trunk of a motorcar and like applications. 4,240,619, Cl. 267-65.00R.
Wirth Gallo & Co.: *See—*
Saner, Kaspar, 4,240,289, Cl. 73-141.00R.
Wirth, Thaddaus: *See—*
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.
Wisconsin Alumni Research Foundation: *See—*
Updike, Stuart J.; and Shults, Mark C., 4,240,438, Cl. 128-635.000.
Wisniewski, Alexander. Chimney safe heat saver. 4,240,361, Cl. 110-119.000.
Witt, Paul R.; and Harvey, Richard D., to Grain Processing Corporation. Starch liquefaction process. 4,241,183, Cl. 435-95.000.
Wittenbrink, Dieter: *See—*
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, 4,240,744, Cl. 355-74.000.
Wohler, Fritz: *See—*
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.
Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, 4,241,227, Cl. 568-761.000.
Woitun, Eberhard: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.
Wolfle, Wilfried: *See—*
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, 4,240,432, Cl. 128-305.500.
Womble, David A.: *See—*
Wetherell, William B.; and Womble, David A., 4,240,707, Cl. 350-294.000.
Wong, Daniel: *See—*
Linnecke, Carl B.; and Wong, Daniel, 4,240,751, Cl. 356-409.000.
Wong, Eunice K. T.: *See—*
Milberger, Ernest C.; and Wong, Eunice K. T., 4,240,931, Cl. 252-438.000.
Wong, Lip F.; and Whiteman, Benton A., to Reynolds Metals Company. Lightweight drill rod. 4,240,652, Cl. 285-91.000.
Wonnacott, Thomas W.: *See—*
Votava, Werner F.; and Wonnacott, Thomas W., 4,240,837, Cl. 106-48.000.
Woo, James T. K., to SCM Corporation. Polyurethane electrocoating composition. 4,241,200, Cl. 525-455.000.
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., to Rando Machine Corporation. Fiber feeding apparatus for carding machines and the like. 4,240,180, Cl. 19-105.000.
Wood, Grady M.: *See—*
Patterson, Raymond B., III; and Wood, Grady M., 4,241,315, Cl. 330-261.000.
Work, Ray A., III; and Pankratz, Richard P., to Du Pont de Nemours, E. I., and Company. Gelatin-polyester-aziridine product subbing layer for polyester photographic base. 4,241,169, Cl. 430-532.000.
Worsley, Gilbert P., to G. P. Worsley & Company Limited. Apparatus for moving materials. 4,240,541, Cl. 198-518.000.
Wozniak, Tadeusz: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.
Wright Rain Limited: *See—*
Harvey, Vernon B. W., 4,240,461, Cl. 137-344.000.
Wrightson, John C., to Heritage Quilts, Inc. Filled body robe. 4,240,159, Cl. 2-243.00R.
Wunnink, Gerrit J.: *See—*
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.
Wyatt, John E. Apparatus and method for conveying grain. 4,240,772, Cl. 414-299.000.
Wyner, Elliot F.; and Daignault, Alan J., to GTE Products Corporation. Warm color arc discharge lamp having improved efficiency. 4,241,276, Cl. 313-487.000.
Wynosky, Thomas A., to United Technologies Corporation. Acoustical turbine engine tail pipe plug. 4,240,519, Cl. 181-213.000.
Xerox Corporation: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,241,156, Cl. 430-41.000.
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.
Young, Eugene F., 4,240,740, Cl. 355-3.0DD.
Yamada, Minoru: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.
Yamada, Toyotaka: *See—*
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,240,735, Cl. 354-288.000.
Yamaguchi, Genji: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.
Yamamoto, Hisao: *See—*
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.
Yamamoto, Masachika, to Sumitomo Electric Industries, Ltd. Disc brake pad wear warning device. 4,241,327, Cl. 340-52.00A.
Yamasaki, Tetsuro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Yamashita, Haruhiro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Yamauchi, Masaaki, to Hitachi, Ltd. In-line type electron gun structure for color picture tubes. 4,241,275, Cl. 313-413.000.
Yamawaki, Naokuni: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.
Yamazaki, Masaya: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Yamazaki, Takeo; and Miyagishi, Shigeki, to Aisin Seiki Kabushiki Kaisha. Parking brakes. 4,240,307, Cl. 74-503.000.
Yan, Tsoung-yuan, to Mobil Oil Corporation. Ion exchange process for the recovery of uranium. 4,241,026, Cl. 423-7.000.
Yan, Tsoung-yuan: *See—*
Audeh, Costandi A.; and Yan, Tsoung-yuan, 4,240,901, Cl. 208-324.000.
Yandrick, Rudolph M.: *See—*
Medvetz, Edward J.; and Yandrick, Rudolph M., 4,240,223, Cl. 43-58.000.
Yara Engineering Corporation: *See—*
Moll, William F., Jr.; and Thompson, Thomas D., III, 4,240,951, Cl. 260-40.00R.
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, to Fujitsu Limited; and Fujitsu Ten Limited. Radar equipment for vehicles. 4,241,348, Cl. 343-17.500.
Yazaki, Yoshio: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Yazawa, Fumi: *See—*
Yazawa, Toshio; and Yazawa, Fumi, 4,240,435, Cl. 128-354.000.
Yazawa, Toshio; and Yazawa, Fumi. Hair tweezers. 4,240,435, Cl. 128-354.000.
Yeh, Pochi A.: *See—*
Tracy, John M.; and Yeh, Pochi A., 4,240,696, Cl. 350-163.000.
Yeh, Quey-Mei: *See—*
Yeh, su-Chieh; and Yeh, Quey-Mei, 4,241,242, Cl. 179-157.000.
Yeh, su-Chieh; and Yeh, Quey-Mei. Telephone handset holder. 4,241,242, Cl. 179-157.000.
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, to Toyo Boseki Kabushiki Kaisha. Enzyme electrode provided with immobilized enzyme membrane. 4,240,889, Cl. 204-195.00B.
Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.
Yonekubo, Ken, to Olympus Optical Co., Ltd. Photoelectric switching means for microscope illumination system. 4,241,251, Cl. 250-205.000.
Yonezawa, Seiji: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Yoshida Kogyo K.K.: *See—*
Nawa, Kooichiro, 4,240,235, Cl. 52-397.000.
Yoshida, Motohiko: *See—*
Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko, 4,240,194, Cl. 29-568.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,2,3-Trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene secondary alkanols, alkanones, cycloalkanols and cycloalkanones, organoleptic uses thereof in perfume compositions, colognes and perfumed articles and process for producing same. 4,241,228, Cl. 568-816.000.
Yoshihara, Yoichiro: *See—*
Machida, Hisashi; and Yoshihara, Yoichiro, 4,240,834, Cl. 106-42.000.

Yoshikawa, Katsushi: *See*—
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.
Yoshioka, Takao: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Young, Eugene F., to Xerox Corporation. Development system. 4,240,740, Cl. 355-3.0DD.
Young, Frederick A.: *See*—
Griffin, Edward L.; and Young, Frederick A., 4,241,323, Cl. 333-209.000.
Young, Vernon V.: *See*—
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., 4,241,061, Cl. 424-250.000.
Youngstown Steel Door Company, The: *See*—
Phillips, Thomas E., 4,240,357, Cl. 105-378.000.
Yuan, Shao W. Ground cold storage and utilization. 4,240,268, Cl. 62-260.000.
Yuhash, Ladd: *See*—
Smith, William G.; and Yuhash, Ladd, 4,240,324, Cl. 89-156.000.
Zager, Raymond: *See*—
Nestor, Jack; and Zager, Raymond, 4,240,523, Cl. 184-1.500.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.
Zalessky, Eduard A.; and Smyshlyaev, Vladimir V. Method for triggering ultrasonic flow meter and ultrasonic flow meter adapted for same. 4,240,292, Cl. 73-861.270.
Zbinden, Jurg: *See*—
Rascher, Andreas; and Zbinden, Jurg, 4,240,655, Cl. 285-323.000.
Zeeh, Bernd: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.
Zeller-Plastik Koehn, Grabner & Co.: *See*—
Brach, Ulrich K. G., 4,240,604, Cl. 248-316.00D.
Zenith Radio Corporation: *See*—
Tanaka, Akio, 4,241,449, Cl. 455-186.000.
Zoina, Giuseppe, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A. Process and device for interlacing multifilament yarns. 4,240,188, Cl. 28-274.000.
Zondler, Rolf: *See*—
Viohl, Uwe; and Zondler, Rolf, 4,240,896, Cl. 204-299.00R.
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., to Chemplate Corporation. Vehicle wheel covers. 4,240,670, Cl. 301-9.0DN.
Zydzik, George J.: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Birdsall, John D. Flexible track for electrically energized miniature vehicles. Re. 30,454, Cl. 238-10.00F.

Consonni, Pietro: *See*—
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. Re. 30,457, Cl. 424-322.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Gruppo Lepetit S.p.A.: *See*—
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Henderson, Eulas W., to Phillips Petroleum Company. Apparatus for making carbon black. Re. 30,455, Cl. 422-156.000.

Hitachi Maxell, Ltd.: *See*—
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Ife, Robert J.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Ikebata, Rokurou: *See*—
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Iwamaru, Tugiyasu: *See*—
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Lerner, Leonard: *See*—
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Medical Laboratory Automation, Inc.: *See*—
Scordato, Emil A.; and Strobel, William C., Re. 30,453, Cl. 73-425.600.

Moczygemba, George A., to Phillips Petroleum Company. Coupling of alkali metal-terminated polymers. Re. 30,460, Cl. 525-334.000.

Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, to Gruppo Lepetit S.p.A. 2-Substituted phenyl-s-triazolo[5,1-a] isoquinoline compounds. Re. 30,456, Cl. 424-258.000.

Phillips Petroleum Company: *See*—
Henderson, Eulas W., Re. 30,455, Cl. 422-156.000.
Moczygemba, George A., Re. 30,460, Cl. 525-334.000.

Schweiger, Richard G. Nitrite esters of polyhydroxy polymers. Re. 30,459, Cl. 525-61.000.

Scordato, Emil A.; and Strobel, William C., to Medical Laboratory Automation, Inc. Pipettes. Re. 30,453, Cl. 73-425.600.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Strobel, William C.: *See*—
Scordato, Emil A.; and Strobel, William C., Re. 30,453, Cl. 73-425.600.

Togo, Takayuki: *See*—
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, to Hitachi Maxell, Ltd. Dry cells. Re. 30,458, Cl. 429-201.000.

LIST OF DESIGN PATENTEES

Ahern, Paul B. Paint pot liner. 257,668, 12-23-80, Cl. D9-429.000.

Appel, Mel; Kress, George; and Means, Paul, to Appel, Mel. Simulative toy vehicle. 257,683, 12-23-80, Cl. D21-76.000.

Baron Rubber Limited: *See*—
Combaret, Luc, 257,647, Cl. D2-320.000.

Beasley, Sue A. Hobo doll. 257,682, 12-23-80, Cl. D21-171.000.

Bechtel, Daniel L. Stand for a magazine-fed pistol. 257,687, 12-23-80, Cl. D22-7.000.

Beck, Nevitt S. Snow disc. 257,672, 12-23-80, Cl. D12-11.000.

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Gantz, Carroll M., 257,661, Cl. D7-164.000.

Brezney, Jacqueline, to Unican Security Systems, Ltd. Escutcheon. 257,662, 12-23-80, Cl. D8-350.000.

Brunswick Corporation: *See*—
Moore, William D., 257,684, Cl. D21-232.000.

Campana, Alfred; and Waterfield, Martin J., to Florists' Transworld Delivery Association. Bowl. 257,654, 12-23-80, Cl. D7-1.000.

Clarion Corporation of America: *See*—
Fujiwara, Makoto, 257,677, Cl. D14-37.000.

Cleary, John P.; and Heineman, Ralph A., to Heineman, Ralph A. Lathe. 257,678, 12-23-80, Cl. D15-130.000.

Cleary, John P.; and Heineman, Ralph A., to Heineman, Ralph A. Drill press and mount therefor. 257,679, 12-23-80, Cl. D15-132.000.

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Mercadante, Ottorino N., 257,655, Cl. D7-36.000.

Davis, Robert P.: *See*—
Katz, Ira R.; and Davis, Robert P., 257,650, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,651, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,652, Cl. D3-71.000.

Deschamps, Robert L.: *See*—
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Duff, James A.: *See*—
Green, Paul N.; and Duff, James A., 257,675, Cl. D14-11.000.

Elliott, Clayton A. Adjustable level. 257,671, 12-23-80, Cl. D10-69.000.

Enduro Corporation: *See*—
Stoll, Roger L., 257,657, Cl. D7-45.000.

Florists' Transworld Delivery Association: *See*—
Campana, Alfred; and Waterfield, Martin J., 257,654, Cl. D7-1.000.

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Gambro, AG: *See*—
Riede, Gerhard, 257,689, Cl. D24-21.000.

Gantz, Carroll M., to Black & Decker Inc. Portable vacuum cleaner. 257,661, 12-23-80, Cl. D7-164.000.

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Silva, Manuel C., 257,686, Cl. D22-1.000.

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Guodace, Ronald A., 257,660, Cl. D7-137.000.
Knope, William J., 257,658, Cl. D7-137.000.

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Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,651, 12-23-80, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,652, 12-23-80, Cl. D3-71.000.

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Kitson, Brian. Textile fabric. 257,695, 12-23-80, Cl. D92-1.0AA.
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Peterson, Jerry D.; and Knief, Gerald L., 257,691, Cl. D30-13.000.
Knope, William J., to International Silver Company. Article of flatware. 257,658, 12-23-80, Cl. D7-137.000.
Krapowicz, Jacob A., to Remington Products, Inc. Hair grooming attachment. 257,690, 12-23-80, Cl. D28-54.000.
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Appel, Mel; Kress, George; and Means, Paul, 257,683, Cl. D21-76.000.
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Magnetic Peripherals Inc.: *See*—
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McKee, Donald S., to Scott & Fetzer Company, The. Bracket design for retractable awnings. 257,663, 12-23-80, Cl. D8-354.000.
McKee, Donald S., to Scott & Fetzer Company, The. Bracket for retractable awnings. 257,664, 12-23-80, Cl. D8-354.000.
McKee, Donald S., to Scott & Fetzer Company, The. Double channel roll bar for retractable awnings. 257,666, 12-23-80, Cl. D8-376.000.
Means, Paul: *See*—
Appel, Mel; Kress, George; and Means, Paul, 257,683, Cl. D21-76.000.
Memorex Corporation: *See*—
Belgin, Stepen G., 257,649, Cl. D3-35.000.
Mercadante, Ottorino N., to Corning Glass Works. Plate or the like. 257,655, 12-23-80, Cl. D7-36.000.
Milton, John L. Roll bar. 257,673, 12-23-80, Cl. D12-156.000.
Moore, William D., to Brunswick Corporation. Pool table. 257,684, 12-23-80, Cl. D21-232.000.
Oat Willie's Dept. Store, Inc.: *See*—
Robertson, Alexander B., 257,669, Cl. D9-436.000.
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Peterson, Jerry D.; and Knief, Gerald L., to Ritchie Industries, Inc. Animal waterer. 257,691, 12-23-80, Cl. D30-13.000.
Poulin, David A. See-saw. 257,685, 12-23-80, Cl. D21-251.000.
Poust, Michael M.: *See*—
Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M., 257,693, Cl. D30-35.000.
Poust, William T., Jr.: *See*—
Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M., 257,693, Cl. D30-35.000.
Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M. Horseshoe. 257,693, 12-23-80, Cl. D30-35.000.
Remington Products, Inc.: *See*—
Krapowicz, Jacob A., 257,690, Cl. D28-54.000.
Riede, Gerhard, to Gambro, AG. Dialyzer cartridge. 257,689, 12-23-80, Cl. D24-21.000.
Riedell, Edwin H. Geriatric restraint. 257,646, 12-23-80, Cl. D2-27.000.
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Scott & Fetzer Company, The: *See*—
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McKee, Donald S., 257,666, Cl. D8-376.000.
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Kehl, Joseph D.; and Deschamps, Robert L., 257,676, Cl. D14-28.000.
Silva, Manuel C., to Guiler, Farreld Franklin. Knife handle. 257,686, 12-23-80, Cl. D22-1.000.
Stoll, Roger L., to Enduro Corporation. Combined coaster and calendar. 257,657, 12-23-80, Cl. D7-45.000.
Suntory Limited: *See*—
Ito, Nobuyoshi, 257,667, Cl. D9-401.000.
Tarrida, Joel M. Combination book enclosure and reading lamp. 257,648, 12-23-80, Cl. D3-33.000.
Thayer, Charles E. Pet feeder. 257,692, 12-23-80, Cl. D30-13.000.
Unican Security Systems, Ltd.: *See*—
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Walker, Alice R. Pie and pizza serving portion indicator. 257,656, 12-23-80, Cl. D7-43.000.
Waterfield, Martin J.: *See*—
Campana, Alfred; and Waterfield, Martin J., 257,654, Cl. D7-1.000.
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Young, Leroy. Game holder or similar article. 257,665, 12-23-80, Cl. D8-367.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 23, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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